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MORRIS FISHBEIN, M.D.

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POSTGRADUATE EDUCATION IN OPHTHALMOLOGY IN THE UNITED STATES

Chairman's Address

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Houston, Texas

Until a quarter of a century ago it was considered that one could not be much of an ophthalmologist unless one had received at least part of one's education in Europe. This was the popular opinion despite the fact that some of our ablest men had never studied there or at most had spent but brief periods in the various clinics abroad. This belief had considerable basis in fact, for in the latter part of the eighteenth century and throughout the nineteenth the great teachers lived and taught in Europe. In England, Thomas Young, William Mackenzie and Sir William Bowman and on the Continent, Arlt, von Graefe, Helmholtz, Donders and others were opening a new science. Later such titans as Parsons, Priestly Smith, Ernst Fuchs, Axenfeld, LaGrange, Elschnig, Meller and their colleagues added to the sum of knowledge until ophthalmology came into its own as a specialty.

Meanwhile many Americans had gone to Europe to sit at the feet of the masters and had returned to open institutions devoted to the care and study of the eye—to disseminate the knowledge they had acquired and to add to it by scientific and clinical investigation. Near the middle of the nineteenth century Hermann Knapp arrived in New York. He had already attained fame as a teacher in Germany, and his influence as teacher and clinician was soon felt in this country. He contributed immensely to ophthalmology in the United States and left a son and a grandson to carry on the tradition.

The first concerted effort to give a course in the basic sciences related to ophthalmology was by the Graduate School of Medicine of the University of Pennsylvania in 1919, although the University of Colorado gave a very good three months' course which I had the pleasure of taking. This course in Philadelphia has been continued through the years, and it has aided immeasurably in the dissemination of knowledge of ophthalmology in the United States. From this pioneer movement in graduate training similar courses have sprung, until now eight universities are giving postgraduate instruction in these basic sciences.

What is the situation today? I selected this subject for discussion because of the great number of young physicians who would like to enter ophthalmology but can find no place for adequate training. This condition has, of course, been aggravated by the number of veterans who have decided to specialize under the Veteran's Bill of Rights, but aside from this the increasing tendency to leave the field of general medicine would overdemand our training facilities.

It has been estimated that one ophthalmologist should be allotted to 15,000 persons. With the population of the United States at about 140,000,000, it would require about 9,333 ophthalmologists to care for the population. I have not been able to determine accurately how many physicians are practicing ophthalmology wholly or in part, but there are probably about 6,000. There are approximately 2,303 living persons who hold the certificate of the American Board of Ophthalmology and approximately 600 applications pending. Less than half of those practicing ophthalmology have been certificated, but the percentage of certified specialists is increasing each year as the older practitioners are taken out of the picture by death or retirement, and better facilities are furnished for training the younger ones.

If we insist that for one to be proved a competent ophthalmologist he must be certificated by the board—and there are those who disagree with this point of view—let us see what facilities we have for training these young persons, not only to pass the board examination but to produce ophthalmologists who can carry on and develop our specialty. In this discussion I will make no effort to distinguish between the terms graduate and postgraduate education. In recent years the term graduate education has come to mean the longer courses and residencies, while the term postgraduate alludes to the shorter or refresher courses.

Training in ophthalmology must come from one or more of the four following sources: (1) courses in the basic sciences related to ophthalmology, (2) residencies in ophthalmology in a general or special hospital, (3) work in outpatient departments of clinics and (4) association in practice with an experienced ophthalmologist. Probably the best trained men have enjoyed all of these privileges, but like other blessings they come to only the chosen few; most of us have had to get our training where and how we could. This is not the best way, as anyone will admit who has had to dig it out for himself. Therefore, if there is anything that can be done to extend our facilities for graduate and postgraduate training, we should set about it.

According to the information I have been able to obtain, courses in basic sciences related to ophthalmol-

From Baylor University College of Medicine, Houston, Texas.

Read before the Section on Ophthalmology at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 23, 1948.

ogy, not limited to residents, are given at the following institutions. The number of admissions in each is listed.

Washington University	12
Harvard Medical School	30
University of Illinois	30
New York University College of Medicine	24
Northwestern University	12
Pennsylvania University Graduate School	28
Tulane University	12
Wayne University	20
Ophthalmological Study Council	100

There are, of course, many institutions which give the basic courses to their own residents, and some cooperate with neighboring eye hospitals in that respect. Unfortunately, there are still a very few large eye hospitals where the training is still unorganized and desultory and the residents pick up what information they can get.

According to the Directory Department of the American Medical Association, in September 1947 physicians practicing ophthalmology alone were 1,885, and those practicing ophthalmology and otolaryngology together were 4,070, a ratio of about 1 to 2. It seems certain that in the future this ratio will change, so that within a few years more men will be practicing ophthalmology and fewer otolaryngology. Otolaryngologists say that since the advent of sulfonamide drugs and antibiotics it is difficult to find enough operative work to train men properly. I have even heard otolaryngology referred to as a dying specialty. However, if the otolaryngologists associated with me are a fair example, the specialty is a very lusty corpse. A statistician of the American Medical Association figured that a city of less than 25,000 could not support a physician who practiced ophthalmology alone. That could depend on the number and quality of optometrists in the same city. The fact is that most of the men in the smaller cities practice ophthalmology and otolaryngology, do good work and keep rather busy. Most young men who start to specialize take their training with the idea of being certificated. With the demands made by the Boards of Ophthalmology and Otolaryngology becoming more stringent, few men will spend the necessary time to prepare themselves in both specialties, so that probably the eye, ear, nose and throat specialist is on his way out. This will work a hardship on the smaller communities in the years ahead. I see no workable solution for this except a clinic containing a member of each specialty.

In 1947 there were 630 residencies in ophthalmology and otolaryngology approved by the American Medical Association. Two hundred and forty-one of these are in ophthalmology, 326 in otolaryngology and 73 in both specialties. This does not mean, of course, that 241 ophthalmologists will finish their training each year, for most of the residencies are for at least two years, and some are four years in length. It is safe to say that less than a hundred well trained ophthalmologists are produced each year under our present system. This is not because there is a dearth of candidates, for the applications for basic courses and for residencies exceed the number of places by at least 5 to 1. Several young men who have sought training in ophthalmology have told me that it required not only high grades in medical school, a pleasing personality and a fine record of service, but also a friend with great influence at court to secure such a place. My experience in trying to help a few men have convinced me that this is true.

The situation that confronts us then is that we need more ophthalmologists, we have the material to make them from, but we do not have the places to train them. What can we do about it? That depends largely on whether the profession is willing to go to work on the problem. It is folly to suppose that there are only eight medical schools in the United States capable of having instruction courses not limited to their own residents. Could these courses not be extended to take in others? I am sure that they could. Many general hospitals and small eye hospitals that have not the facilities for basic training would take such men as residents and give them clinical experience. Hospitals that have not had residents in ophthalmology might be induced to find a place for men who had such basic training.

I must pause here a moment to pay tribute to the Ophthalmological Study Council. This was the brain child of three men: Dr. Walter B. Lancaster, Dr. S. Judd Beach and Dr. Theodore L. Terry. These men saw the great need for basic instruction and did something about it. In 1945 they gave this course in Boston to 80 candidates. Because of housing shortage and adverse weather conditions, it was given at St. Petersburg, Fla., in 1946. Seventy-eight students completed this course. Unfortunately, Dr. Terry died before the second course started. Last year the course was given to 112 students in Portland, Maine, and it will be repeated there this year with a limit of a hundred students. The sacrifice of time, energy and money that the men who run this course have freely made has not been generally appreciated—nor have the results of their work. The students who take this course have an examination each week, and their men are so well grounded when they finish that most of them do very well on the basic science part of the board examination. I must mention that while the three men who originated the Ophthalmologic Study Council were members of the American Board of Ophthalmology, the Board did not officially sponsor the council and, aside from the cooperation of individual members who were asked to help in teaching, had nothing whatever to do with conducting it. This statement is made so that no one will assume that because of taking this course, or any other, he is thereby rendered eligible to take the board examination. Every applicant must pass the Committee on Requirements—this rule has been in effect since the board's inception.

In an address before the American Academy of Ophthalmology and Otolaryngology last October, the president, Dr. Alan C. Woods,¹ centered his remarks on the American Board of Ophthalmology. As chairman of the board, I want to take this opportunity to reply. On the whole, Dr. Woods was very kind in his evaluation of the board's work. Two points of criticism which he leveled at the board are certainly debatable. The first was that the requirement of a year's rotating internship was unnecessary and disadvantageous, in that it drew bright young men away from ophthalmology into other specialties that made no such demand. We still have more bright young men that we can train, and I believe that if a

1. Woods, A. C.: Address of President: The Present Policies of the American Board of Ophthalmology and the National Societies in Relation to the Progress of Ophthalmology. *Tr. Am. Acad. Ophth.* 52:5 (Sept.-Oct.) 1947.

candidate is so little interested in ophthalmology that he could not spend a year learning some general medicine, he would not make a very good ophthalmologist. In the first year of eye residency at Johns Hopkins Hospital, the resident is given a certain amount of general medicine, but in most institutions he is not. Personally I believe a man would make a better clinical ophthalmologist if he had three to five years of general medicine, but under present conditions it is impractical to require this. Another criticism was that certain societies require the certificate for admission and that some hospitals and medical schools require it for appointment or promotion to the staff. This is true and to a large extent is desirable. If one admits that the American Board of Ophthalmology has been a potent factor in raising educational standards, then one must agree that there must be some strong incentive for one earnestly to desire the certificate. The certificate has no legal significance, so that it must have a professional one. Certainly, few persons would go to the trouble to prepare themselves for an examination and endure what appears to be a rather nerve-wracking experience to most of the candidates in order to have a piece of paper to hang on the wall that did not mean a great deal. In order to make the certificate worth while and thus raise the standards of postgraduate training, it seemed necessary for the board to request certain organizations to require the certificate as one requisite to admission. While our board was first in the field by many years, it had nothing to do with the formation of the Advisory Board for Medical Specialties. This Advisory Board was sponsored by the Committee on Hospitals and Medical Education of the American Medical Association. While the Board of Ophthalmology is a member of the Advisory Board and sends two members to take part in the discussion at the meetings and while the Ophthalmology Board attempts to cooperate with the other boards, it nevertheless maintains its independence of thought and action, and is not responsible for the action of any other member of the Advisory Board.

Some of the criticisms of the boards alluded to by Dr. Woods as originating with Dr. Chesney do not apply to the American Board of Ophthalmology. We do not require a three year, a two year or even a one year residency in ophthalmology as a prerequisite to examination. We do not require a basic science course. Each applicant's training and experience is evaluated individually, and if the majority of the Committee on Requirements feels that the candidate is qualified he is given the preliminary test. When the Council on Hospitals and Medical Education of the American Medical Association demanded through the Advisory Board that all boards should require three years of institutional training, the American Board of Ophthalmology said that it did not take that training to start a person in the study of ophthalmology and that we had too few institutions in which to train our men. As a consequence, we, with two other boards, were not approved for a certain period. Later it became evident that it was undesirable for all boards to have the same requirements, so that we were reinstated. The American Board of Ophthalmology has been in existence long enough so that everyone who has entered the practice of ophthalmology within the past thirty-two years has known that if he wished to be certificated he had to

make certain preparations for it. Unfortunately, a large number of persons paid no attention during the early years of the board's existence, but now, since the certificate has become increasingly valuable, they want it and are not prepared to take the examination. As for many years certificates have been issued only to those who pass the examination, there are many disappointments. There has been considerable antiboard sentiment created within the profession in recent years by the action of the younger boards in making the requirements so stringent that men established in certain specialties could not meet them without heavier sacrifices than they were willing to make. The fact that certain so-called minor specialties, such as the proctology and the allergy, have not been permitted to form their own boards has led to bitterness. It is evident that hospitals and medical schools should not make certification a requisite to appointment or promotion in a specialty that has not had a board long enough for the staff to have had opportunity to prepare for certification. Time and good judgment on the part of hospital and medical school administrators will solve this problem.

There is one phase of postgraduate training in ophthalmology of which we should be thoroughly ashamed—the training of Negro physicians. That might be said of the education of Negroes in medicine, for there are only two medical colleges devoted to the education of Negroes out of seventy class A schools in the United States, and there are few Negro graduates from the other sixty-eight schools. Considering that 10 per cent of the population is Negro, this is a sorry showing. Only about ten Negro physicians have been certificated by the American Board of Ophthalmology. There are very few places where Negroes are accepted as residents. If the plan for cooperation in medical education proposed at a recent conference of governors from the Southern states matures, there should be a great medical school for Negroes opened, with facilities for postgraduate training.

Having spoken of the situation that exists and having pointed out the fundamental needs in postgraduate medical education in ophthalmology, I must sorrowfully admit that I have no solution to offer. It seems to me, however, that the difficulties are not insuperable. It is impossible that only eight out of seventy of our medical schools are so situated that basic training courses can be given. It is unlikely that cities the size of New York, Philadelphia and Boston, with from two to four medical schools each, could provide a staff for only one course. There are many special and general hospitals in the country that could take on more residents if they were urged. There must be some organization vitally interested in postgraduate education that will persistently try to influence institutions to improve and increase their training facilities. I know of no better group to undertake this task than the American Board of Ophthalmology. While the board has always been interested in this, it has never had a committee that devoted itself wholeheartedly and continuously to this duty. Such a committee has recently been appointed. I believe that within a few years as a result of such a committee's efforts and with the cooperation of the teaching institutions a radical change for the better will occur in postgraduate teaching in ophthalmology.

PREVENTION OF POSTOPERATIVE PULMONARY INFECTIONS

Inhalation of Micropowdered Penicillin and Streptomycin

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and

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The prevention of pulmonary complications following major abdominal or thoracic surgical intervention is still a matter of deep concern, especially in the northeastern sections of the United States where chronic sinusitis and chronic basilar pulmonary infection are rather common. Pulmonary complications are of two general groups, those associated with pulmonary emboli and those associated with bacterial infection with or without atelectasis. Only the second type is to be considered in this report. The use of chemotherapeutic agents, particularly penicillin and, more recently, streptomycin, has been valuable in reducing the incidence of these complications, but the methods of administration, dosage and ideal duration of treatment are still a matter for some debate.¹ In the series of patients to be presented, stress has been placed on an accurate knowledge of the preoperative bacterial flora of the upper part of the respiratory tract and an attempt has been made to reduce the flora preoperatively by inhalation of appropriate chemotherapeutic agents. In the treatment of acute and chronic bronchopulmonary infections, it has been demonstrated² that organisms sensitive to penicillin or streptomycin may be diminished or greatly

reduced in the respiratory tract by inhalation of aerosols of the appropriate antibiotic. The use of penicillin and streptomycin in the micronized form for inhalation, as described by Taplin and Bryan,³ appears to offer definite advantages over other methods of administration. Figures 1 and 2 show the apparatuses used in this study, which simplify the intrapulmonary administration of penicillin and streptomycin. This study is submitted as a preliminary report. It presents a method for reducing the incidence of postoperative pulmonary infections by inhalation of micronized penicillin or streptomycin.

The pathogenesis of postoperative pulmonary infection is somewhat different from that of the usual lobar pneumonia in that the offending bacteria are usually those seen in the normal flora of the mouth and upper part of the respiratory tract. The incidence of pneumococcal bronchopneumonia corresponds roughly with the incidence of the pneumococcal carrier state in the general population.⁴ Postoperative pneumonia is also frequently due to bacteria which are considered nonpathogenic in the throat but which became pathogenic in the lung when the normal mechanism of clearing the tracheobronchial tree of secretions is disturbed following administration of an anesthetic. It is probable that most cases of postoperative pneumonia begin in this manner from small areas of atelectasis, and prophylactic measures used to prevent the accumulation of bronchial secretions have materially reduced the incidence of this complication. Postanesthetic tracheal suction or bronchoscopic aspiration, hyperventilation, changing the patient's position and encouraging him to cough, early ambulation and other postoperative measures are all methods which tend to prevent the accumulation of secretions and increase the pulmonary ventilation. In addition to these methods, it seems logical to attempt to reduce the existing bacterial flora of the upper part of the respiratory tract by chemotherapy before the operation.

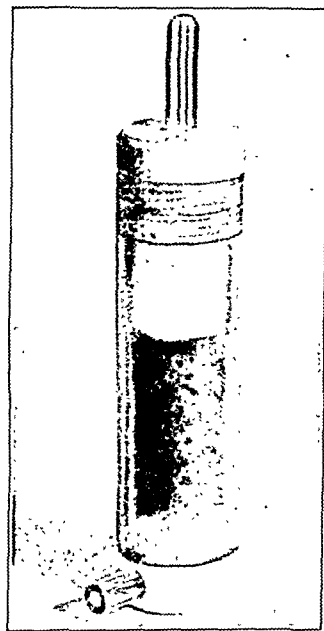


Fig. 1.—Insulator type apparatus used for inhalation of micropowdered penicillin or streptomycin.

Merck & Co., Inc., made a grant-in-aid regarding streptomycin studies and gave supplies of streptomycin preparations.

Parke Davis & Company supplied powdered diphenhydramine hydrochloride ("benadryl hydrochloride") used in these experiments.

Lederle Laboratories, subsidiary of the American Cyanamid Corporation, made grants-in-aid and gave laboratory supplies and penicillin.

With the technical assistance of Carol MacGregor, Juanita Warner, Jack Presburg, M.D., Louis Jensen, Carl Homburger and Edward Roche.

Work was performed in the Departments of Medicine and Surgery, University of Rochester School of Medicine and Dentistry, and Dentistry and Clinics of Strong Memorial Hospital and Rochester Municipal Hospital.

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METHOD AND MATERIALS

The method of study included preoperative cultures of sputum, or of the nasopharynx if sputum was not available, and the bacteria were identified by the usual laboratory methods. Tests of sensitivity to penicillin and streptomycin were performed in order to estimate the probable value of the treatment and as a guide to proper dosage. The test used was admittedly a qualitative one based on the principle described by Fleming⁵: "Penicillin diffuses through agar and inhibits the growth of an organism to a distance proportional to the sensitivity of that organism." In other words, an organism which shows a wide zone of inhibition of growth is relatively sensitive, whereas an organism which shows a small zone of inhibition is relatively resistant. There are many factors in this test which can be further modified and thereby produce a more accurate result; however, for clinical purposes, this simple test has proved satisfactory. As a control group, 195 preoper-

These results indicate the need for greater intrapulmonary penetration by the antibiotic. For example, in patients who showed *Streptococcus viridans* preoperatively, 97 per cent of the organisms were sensitive to penicillin but one-half the patients still had positive cultures postoperatively. A similar series of 51 cases is

TABLE 1.—Micro-Organisms Cultured from Nasopharynx and Sputum Prior to Treatment (195 Cases)

Organisms	Penicillin Sensitivity		Streptomycin Sensitivity	
	Number of Cases	Number Sensitive, Percentage	Number of Cases	Number Sensitive, Percentage
<i>Streptococci</i>				
<i>Strep. viridans</i>	183	92	103	99
<i>Strep. hemolyticus</i>	10	90	10	90
<i>Strep. antihemolyticus</i>	49	53	14	94
<i>N. catarrhalis</i>	96	31	47	100
<i>E. coli</i>	16	0	16	100
<i>H. influenzae hemolyticus</i>	30	53	18	100
<i>H. influenzae</i>	31	32	22	100
<i>Staphylococci</i>				
<i>S. aureus hemolyticus</i>	33	85	20	100
<i>S. albus</i>	55	83	15	96
<i>Pneumococci</i>	7	100	2	100
<i>Friedländer's bacillus</i>	3	0	3	100
<i>M. tetragenus</i>	6	100	2	100
<i>Yeast</i>	16	21	16	10
<i>Diphtheroids</i>	20	70	3	100
<i>B. pyocyaneus</i>	1	0	1	100

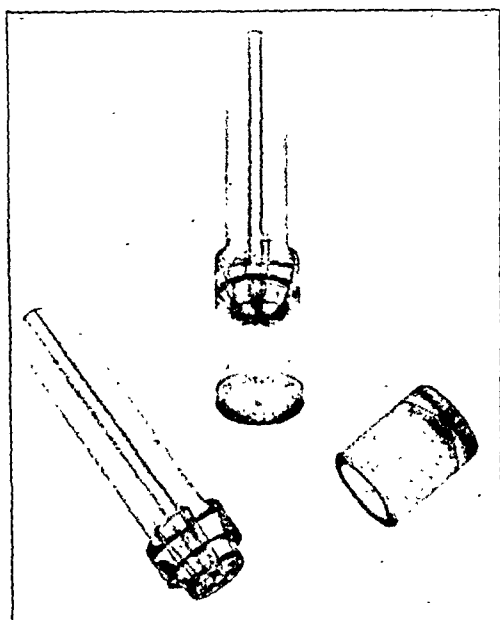


Fig. 2.—Suction type disposal apparatus used for inhalation of micro-powdered penicillin or streptomycin.

ative cultures were studied in this manner, and the results are tabulated in table 1. It is evident that nearly all the bacteria encountered in this group were sensitive to penicillin and/or streptomycin. A group of 96 patients was not treated by any inhalation therapy, and of the 18.7 per cent presenting postoperative pulmonary infections (table 5) more than 75 per cent had the same bacteria predominating in both preoperative and postoperative cultures.

Forty patients were studied who received penicillin by atomizer (34 patients) or mist type aerosol (6 patients) for two days before and after operation (table 2). This group showed a definite reduction in the number of penicillin-sensitive bacteria present following treatment, but there was not the postoperative response that had been expected. We had believed that penicillin given by ordinary throat spray atomizer would be sufficient to eliminate penicillin-sensitive organisms.

recorded in table 3, but the patients were treated with micropulverized penicillin mixtures rather than the atomized or usual aerosol method. In this series, the *Strep. viridans* were observed to be 100 per cent sensitive preoperatively and only 1 positive culture was observed postoperatively after treatment. The number of cultures positive for *Staphylococcus aureus hemolyticus* was reduced about equally with the atomizer aerosol and with the micronized antibiotic. It is noteworthy that there was an increased number of cultures positive for *Escherichia coli* after this treatment, but there were no postoperative pulmonary infections which were considered a result of this organism.

TABLE 2.—Analysis of the Respiration Flora Before and After Penicillin Prophylaxis (by Atomizer, 34 Cases; by Aerosol, 6 Cases)*

Bacteria	Preoperative		Organism Present During Postoperative Period, Number of Cases
	Number of Cases	Number Sensitive, Percentage	
<i>Streptococci</i>			
<i>Strep. viridans</i>	38	97	19
<i>Strep. hemolyticus</i>	3	100	0
<i>N. catarrhalis</i>	8	0	14
<i>E. coli</i>	1	0	10
<i>Staph. albus</i>	9	100	3
<i>Staph. aureus hemolyticus</i>	12	91	1
<i>H. influenzae hemolyticus</i>	4	100	4
<i>H. influenzae</i>	5	20	3
<i>Yeast</i>	2	0	5
<i>B. proteus</i>	0	..	3
<i>Friedländer's bacillus</i>	2	0	1
<i>Pneumococci</i>	2	100	0

* Patients received 100,000 units per day (25,000 units for four doses) for two days prior to operation and for two days after operation.

Streptomycin was also used in 40 cases, preoperatively and postoperatively, and the bacteriologic data are recorded in table 4. The streptomycin was administered in the micronized form and according to the dosage schedule outlined (table 4). As in the previous series, *Strep. viridans* was the predominant organism and before treatment was 100 per cent sensitive to streptomycin. *Neisseria catarrhalis* was the second commonest organism seen on culture, and this responded to treat-

5. Fleming, A.: On the Antibacterial Action of Cultures of Penicillin, with Special Reference to Their Use in the Isolation of *B. Influenzae*, Brit. J. Exper. Path. 10: 226-236, 1929.

ment in a higher percentage of cases than *Strep. viridans*, although total numbers are too small to be of significance. It is interesting that in 10 of the 40 patients (25 per cent), the postoperative sputum and/or nasopharyngeal cultures were sterile following the streptomycin therapy.⁶

The results of the prophylactic preoperative and postoperative use of penicillin and streptomycin by inhalation are summarized in table 5. During the period of time in which this study was in progress, it was impossible to obtain a series in which alternate patients were used as controls, but an attempt has been made to compare the series of treated patients with similar series of untreated patients. Fifty consecutive cases in which major abdominal and thoracic operation was done were analyzed, covering a period of February and March 1946. Many of the patients in this series of 50 and in the control series of 96 studied in 1946-1947 received penicillin intramuscularly postoperatively, but none received it by inhalation. All of the control patients were treated with the commonly accepted methods designed to prevent postoperative complications as outlined previously. The postoperative pulmonary complications were divided into three types—bronchitis, bronchopneumonia and definite atelectasis, with or without pneumonia. The patients were followed up closely, and with any suspicion of pulmonary complication repeated roentgenograms were taken.

The gross percentage of pulmonary complications in the periods studied in 1946 and 1947 was 18.0 and 18.7 per cent, respectively, when no inhalation antibiotic therapy was given. The 40 patients receiving penicillin by the atomizer or aerosol method had a 20 per cent incidence of complications, but those receiving the micropulverized form of penicillin had only a 2 per cent incidence. This difference in results may be due in part to poorer pulmonary penetration of the atomized penicillin. However, in 1 of the 6 patients receiving penicillin aerosol postoperative bronchopneumonia devel-

1946, and the incidence of complications was 20 per cent. It should be strongly emphasized that the percentage incidence of postoperative complications does not reflect the severity of the complications. Many complications were mild and did not prolong the postoperative convalescence appreciably, while others were

TABLE 4.—Analysis of Respiratory Flora Before and After Micronized Streptomycin Prophylaxis (40 Cases)*

Organisms	Streptomycin Sensitivity Preoperatively		Streptomycin Sensitivity Postoperatively †	
	Number of Cases	Number Sensitive, Percentage	Number of Cases	Number Sensitive, Percentage
<i>Streptococci</i>				
<i>Strep. viridans</i>	21	100	10	50
<i>Strep. hemolyticus</i>	1	100	0	..
<i>Strep. anhemolyticus</i>	3	100	0	..
<i>N. catarrhalis</i>	9	100	1	100
<i>E. coli</i>	5	100	6	67
<i>Staphylococci</i>				
<i>S. albus</i>	1	100	2	50
<i>S. aureus hemolyticus</i>	4	100	3	75
<i>Yeasts</i>	0	...	6	17
<i>H. influenzae</i>	4	100	1	0
<i>H. influenzae</i>	2	100	2	50
<i>B. pyocyaneus</i>	1	0	1	0
<i>Diphtheroids</i>	0	...	1	0
<i>B. proteus</i>	1	100	0	..
<i>M. tetragenus</i>	2	100	0	..

* Patients received 300,000 units (0.5 Gm.) preoperatively, (300,000 units the evening before and 200,000 units the morning of operation). Postoperatively the patients received 200,000 units per day for two days.

† No growth in 10 out of 40 cases (25 per cent) in postoperative culture

a definite postoperative setback or catastrophe. The true situation cannot be analyzed until more extensive morbidity and mortality data are available. It is obvious that postoperative pulmonary complications in larger series will not be reduced to zero by using micronized streptomycin as they were in this small series of only 40 patients.

The apparent value of the treatment is illustrated by the case reported herein.

REPORT OF A CASE

E. W., an 80 year old white widower, was admitted to Strong Memorial Hospital on Nov. 11, 1946, with a six months' history of fullness in the epigastrium and regurgitation after eating solid foods, which had become progressively severer. At the time of admission, he was capable of retaining liquids only and had sustained decided loss in weight.

Physical Examination.—The patient was a fairly well developed somewhat emaciated 80 year old white man who appeared chronically ill and coughed frequently. The trachea was deviated to the left. The chest was emphysematous, with coarse rales audible over the main portion of the bronchial tree. The heart sounds were faint and regular. There were moderate epigastric tenderness and spasm on the right side, but no masses were palpable. The results of the remainder of the examination were not remarkable.

Laboratory Examination.—The Wassermann reaction was negative. The red blood cell count was 4,670,000, hemoglobin 17 Gm. per hundred cubic centimeters and white blood cells 8,000, with a normal differential count. The urine was normal. The reaction of the stool to guaiac was negative. Tuberculin precipitation was 5.6 Gm. per hundred cubic centimeters; the albumin-globulin ratio was 3.1 to 2.5. Nonprotein nitrogen was 38 mg. per hundred cubic centimeters and alkaline phosphatase 2.3 Bodansky units. Roentgenographic studies and esophagoscopy established the diagnosis of carcinoma of the distal third of the esophagus.

At the time of admission the patient's general physical condition would not permit surgical removal of the esophageal lesion, because of purulent bronchitis, weakness and poor nutrition. His sputum culture contained (1) Friedländer's bacillus (penicillin resistant), (2) nonhemolytic *Hemophilus influenzae* (penicillin resistant), (3) pneumococci (penicillin sensitive), (4) hemolytic streptococci (penicillin sensitive) and (5) *Strep.*

TABLE 3.—Analysis of the Respiratory Flora Before and After Micronized Penicillin Prophylaxis (51 Cases)*

Organisms	Preoperative		Organism Present During Postoperative Period, Number of Cases
	Number of Cases	Number Sensitive, Percentage	
<i>Streptococci</i>			
<i>Strep. viridans</i>	45	100	1
<i>Strep. hemolyticus</i>	4	100	0
<i>N. catarrhalis</i>	8	15	12
<i>E. coli</i>	6	0	20
<i>S. albus</i>	5	80	3
<i>H. influenzae hemolyticus</i>	3	67	1
<i>H. influenzae</i>	0	..	5
<i>S. aureus hemolyticus</i>	11	90	4
<i>Yeast</i>	1	0	0
<i>Aerobacter aerogenes</i>	0	..	3
<i>B. proteus</i>	1	0	2
<i>M. tetragenus</i>	2	100	0

* Prophylaxis consisted of one to two days of therapy before and after operation, with an average of 100,000 units per day.

oped, and the sputum showed *Strep. viridans* and *Staphylococcus albus*. In 3 other aerosol-treated patients postoperative pulmonary infections developed due to penicillin-resistant organisms. Failure in these cases cannot be considered failure due to the aerosol. Forty patients received micronized streptomycin, and there were no postoperative pulmonary complications. Because the micronized form of the drugs was used in the spring and summer months, a similar series of untreated patients was analyzed from the summer of

6. Durant, Sokalchuk, Morris and Brown.²¹ Harris Murray, Paine and Finland.²⁰ Paine, Murray and Finland.²⁰

viridans (penicillin sensitive). Treatment with aerosol penicillin, 25,000 units six times daily, was started on November 18. After several days of aerosol penicillin therapy, the sputum was decidedly decreased in volume and penicillin-sensitive organisms were absent, but Friedländer's bacilli remained. A transthoracic esophageal resection and esophago-gastrostomy were performed on December 5 by one of us (E. B. M.).

On the first postoperative day, the patient was alert and conscious but was seen to be more dyspneic. There were moist rales heard over both lung fields, and bronchoscopy was performed, with removal of a large formed plug of mucus from the right main bronchus, which was cultured. Treatment with aerosol penicillin was started again. Streptomycin was not available. Bronchoscopy was repeated on the second postoperative day, with removal of another mucous plug. Cultures of the aspirated material showed Friedländer's bacillus only on both occasions. Coarse moist rales were heard throughout both lung fields. Roentgenograms showed early bilateral bronchopneumonia and atelectasis on the left side. Streptomycin therapy was started, 0.25 Gm. every six hours intramuscularly and 100 mg. six times daily in 1 cc. isotonic sodium chloride solution by aerosol. On the third postoperative day his lungs were fairly clear and vital signs showed definite improvement. A sputum culture on the fourth day, after two days of streptomycin aerosol therapy, contained no organisms and the lungs were clear. The patient continued to

teria present in the respiratory tract preoperatively. The chemotherapy should obviously be supplemented with all the other prophylactic measures which help to maintain an adequate airway and which clear the bronchi of secretions. The value of postoperative tracheal aspiration with a catheter or with the bronchoscope as a means of preventing or treating atelectasis cannot be overemphasized.

This report indicates a rather high incidence of postoperative complications in the control groups, but the data is influenced by certain factors. Rochester is in an area where an unusually large percentage of the population has chronic sinusitis, and, particularly in the winter and spring, acute infections of the upper part of the respiratory tract are common. The operations included in this series are procedures performed in the upper part of the abdomen and chest, which carry a higher incidence of pulmonary complications than lower abdominal procedures or operations outside body cavities. The patients listed as having bronchitis were not seriously ill from this complication, but were included in the series if they had fever associated with cough and sputum but no pulmonary consolidation. Patients with this type of illness will survive without specific

TABLE 5.—Incidence of Postoperative Pulmonary Complications

Number of Cases	Dates	Preoperative Penicillin * or Streptomycin,† Inhalation	Postoperative Penicillin or Streptomycin, Inhalation	Postoperative Pulmonary Complications				
				Bronchitis	Bronchopneumonia	Atelectasis Without Pneumonia	Total Number of Cases	Percentage of Complications
50	February and March 1946	None	None	2	4	3	9	18
50	June and July 1946.....	None	None	1	7	2	10	20
96	November 1946 to April 1947	None	None	3	11	3	18	18.7
40	April and May 1947.....	Atomizer or aerosol penicillin	Atomizer or aerosol penicillin	0	8	0	8	20
51	May and June 1947.....	Micronized penicillin	Micronized penicillin	1	0	0	1	2
40	July 1947	Micronized streptomycin	Micronized streptomycin	0	0	0	0	0

* Penicillin—25,000 units four times per day for two days before and after operation.
† Streptomycin—100,000 units three times per day for two days before and after operation.

improve rapidly and was discharged on the fifteenth postoperative day.

Comment.—We feel that if this patient had received both penicillin and streptomycin preoperatively his bronchial tree could have been sterilized and his postoperative pneumonia prevented. When this patient was studied preoperatively, streptomycin was not available in the hospital for prophylactic use. This case demonstrates the clinical value of thorough preoperative and postoperative bacterial study of the sputum.

COMMENT

The results obtained indicate that more emphasis should be placed on the importance of the normal flora of the respiratory tract in the causation of postoperative pulmonary infections. The majority of bacteria commonly seen in the upper part of the respiratory tract are sensitive to penicillin and/or streptomycin, and with preoperative prophylactic chemotherapy their numbers may be reduced or completely eliminated. Chemotherapy should also be continued for several days after operation, until the patient is again able to clear the tracheobronchial tree of secretions, or longer if a specific indication exists. The prophylactic treatment appears to be of specific value if preoperative cultures show bacteria, such as *Strep. viridans*, which may be pathogenic. It is particularly important if preoperative cultures show definite pathogens, such as *Streptococcus hemolyticus*, pneumococci and Friedländer's bacilli. The vast majority of cases of postoperative pneumonia are due to bac-

terial, but they are made extremely uncomfortable by the cough, convalescence may be prolonged and the incidence of abdominal wound disruption is increased. The patients with bronchopneumonia and/or atelectasis were all seriously ill, and in these two groups specific treatment seemed most effective.

It is not the purpose of this report to compare the relative merits of administering penicillin by inhalation in the micronized form with administration by other methods, but the micronized form seems to have some advantage in surgical patients with pulmonary complications. Specimens of the peripheral portion of the lungs have been removed during thoracotomy when the patient has received penicillin prophylactically by this method. Appreciable amounts of penicillin are present, and there is no microscopic evidence that the contact of the penicillin has caused damage to the pulmonary parenchyma. Similar experiments with micronized streptomycin show that it also reaches the periphery of the lungs, although there may be no appreciable amounts present in the blood stream as determined by present methods of assay. These observations indicate that penicillin and/or streptomycin enters the entire bronchial tree, so that the drug is immediately available at the site of infection as well as absorbed in the blood stream in the case of penicillin. Penicillin and streptomycin are also absorbed by the

lymphatic vessels of the lung, since in experiments with dogs therapeutic concentrations were obtained in thoracic chyle, after intratracheal insufflation.

The reaction of the patients to the administration of the micronized form has been in general favorable. The patients are usually grateful that they do not have the repeated needle punctures required by intramuscular or subcutaneous injection. There have been no severe reactions to either penicillin or streptomycin administered by this method, but there have been some untoward effects, most of them minor, and some minor disadvantages to the method. A complete discussion of these features will be published, but it is worth while recording them here in brief.

Analysis of 320 cases in which micropulverized penicillin-dextrose-1 per cent diphenhydramine hydrochloride mixtures, with a mean particle size of 1 micron, were administered by inhalation was made to determine the incidence of local and general allergic reactions. Three patients experienced general urticaria; 1 patient had mild asthma; 1 experienced exacerbation of his epidermophytosis, and 5 per cent noted local allergic sore throat reactions, consisting of redness, swelling and, occasionally, vesicle formation in the mouth, pharynx and tongue. These local reactions subsided in two to five days after discontinuance of treatment, and improvement was speeded by administration of antihistaminics by mouth. Several patients objected to the bitter taste of the penicillin mixtures. Some were troubled with coughing and choking sensations when they first tried the mixture. Nearly all patients were able to learn how to inhale the powdered preparation and avoid coughing after the first dose or two.

The ingredients of the vehicles in the mixtures have now been altered, so that few patients object to the taste of the preparation. Most patients are able to self administer a dose in a period of two to five minutes, using the suction type apparatus, thereby saving considerable nursing time.

It is the opinion of various observers that patients prefer this method of administration to injections or the mist type aerosol apparatus. The method is painless, and the prescribed dose may be self administered with less effort and more rapidly than with the usual mist type aerosol apparatus even when oxygen or some other automatic source of pressure is used.

It is possible that the vehicle dextrose, used in these preparations, acts as an expectorant, since it is hypertonic when it first goes into solution with the bronchial secretions. Several patients who have had chronic bronchitis prior to operation have noted rapid relief of cough, ease of expectoration and reduction in the amount of sputum raised.

This method of prophylactic treatment should be beneficial, particularly in emergency cases in which at the time of operation there is a concurrent acute infection of the respiratory tract. Fifteen patients with postoperative bronchopneumonia have been treated successfully by inhalation of the appropriate antibiotic in the micronized state.

SUMMARY AND CONCLUSIONS

Postoperative pulmonary infections following major abdominal and thoracic procedures occur in 18 to 20 per cent of cases.

Most postoperative pulmonary infections are caused by organisms present in the respiratory tract prior to operation.

Nearly all organisms infecting the respiratory tract are sensitive to either penicillin or streptomycin.

The common pathogens or potential pathogens of the respiratory tract may be temporarily removed or greatly reduced in number before and during the operative and postoperative period by inhalation of relatively small doses of micronized penicillin or streptomycin mixtures. This method of prophylactic treatment has reduced the incidence of postoperative pulmonary complications.

Prophylactic intrapulmonary administration of micronized penicillin and streptomycin mixtures should be especially beneficial in major abdominal emergency conditions with acute concurrent infections of the respiratory tract.

Penicillin and streptomycin assay of peripheral pulmonary tissue obtained from patients undergoing thoracotomy demonstrates penetration of both agents to the terminal bronchial tree.

PREVENTION OF TUBERCULOSIS AMONG STUDENTS OF MEDICINE

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After the establishment of the chest clinic at the University of Minnesota Students' Health Service in 1920, an excessive number of patients came from the Schools of Nursing and Medicine. Examinations were then made only of students who requested them.¹ The incidence of primary tuberculosis (tuberculous infection) among students was not known, but it was assumed to be in excess of 90 per cent. In 1928 the tuberculin test was administered to those entering all departments of the university; only about one third reacted.² Subsequently a much higher incidence of clinical tuberculosis was observed among students and recent graduates in medicine throughout the world than in the general populations of the same areas.

SURVEY OF PHYSICIANS GRADUATED FROM UNIVERSITY

In 1941 we reported the results of a survey of the 1,441 physicians graduated at the University of Minnesota from 1919 to 1932, in which a response was obtained from 1,304 (97.4 per cent).³ Among these graduates there were 7.1 per cent who contracted clinical tuberculosis while in school or after graduation. Among those dead from all causes, 26.2 per cent died from tuberculosis. The question arose as to whether this was a higher incidence than among students and graduates in other professional schools. In 1943 we reported on a similar survey of the students and graduates in our School of Law; only 1.3 per cent were found to have contracted the disease while in school or after graduation.⁴

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Because of lack of space this article has been abbreviated in THE JOURNAL by omission of the table. The complete paper will be found in the authors' reprints, which the authors will be pleased to send on request.

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TESTING OF ENTERING STUDENTS

In 1928 the tuberculin test was administered to entering students, and in 1929 the test, plus roentgen inspection of the chests of the reactors with a complete examination of those with shadows to determine the causes of lesions, became routine procedure. Non-reactors to tuberculin on entrance were retested with tuberculin annually as long as they did not react. Those who became reactors while in school, as well as those who were reactors on entrance, have had annual roentgen inspections of their chests, with complete examination when indicated.

By the tuberculin test we were able to diagnose primary tuberculosis (tuberculous infection) among entering students. Within eight weeks (rarely earlier than three or more than seven weeks) after human tissues are invaded with tubercle bacilli allergy can be detected by the tuberculin test. A characteristic reaction to tuberculin indicates the presence of primary tuberculous lesions. Therefore we were able to diagnose this disease promptly among any nonreactors on entrance who became infected while in school. Whenever a student contracted primary tuberculosis as indicated by the tuberculin reaction, we studied his contacts and in most cases located the origin of his infection. This enabled us to determine in which hospitals and even in which departments of hospitals the majority of students were infected. The tuberculin test also served as the only accurate criterion of the effectiveness of the tuberculosis control measures.

Among the students entering over a four year period beginning in 1929, with 449 graduating, 35.6 per cent reacted to tuberculin on admission. The percentage of reactors increased to 41 at the end of the third year and to 67.8 at the end of the senior year. Indeed, 50.2 per cent of the nonreactors on entrance reacted on graduation. It was alarming that the incidence of those who became reactors while in school increased in each class. For example, among those who graduated in 1933 and 1936, 57.7 and 77.9 per cent, respectively, reacted on graduation.⁵

Before studies were made on these four classes, our recognition of the problem was based on morbidity and mortality.⁶ Therefore the extreme seriousness of the situation was not perceived until we realized that approximately as many students contracted primary tuberculosis (tuberculous infection) during the brief time they were in medical school as had acquired this disease between birth and matriculation. Our studies have revealed that far more students became infected on tuberculosis services than in general hospitals.⁶

PROGRAM AT UNIVERSITY HOSPITAL

In 1936, a case-finding program was instituted among the personnel and the patients of the University Hospital. This provided for initial and subsequent periodic examinations of all employees, regardless of capacity, and for adequate examination for clinical pulmonary tuberculosis in the patients as soon as possible after they entered the institution, regardless of the cause for admission.⁷ The first examination of the members of

the personnel revealed 3 with contagious disease, and among the patients several cases were found coexisting with other diseases for which they were admitted. Both the employees and the patients in whom contagious tuberculosis was revealed were immediately isolated and treated with strict contagious disease technic so as to protect all of their contacts, including the medical students. In 1938 an identical tuberculosis control program among personnel and patients was instituted at the Minneapolis General Hospital, where many of our students work. Thus, in these two hospitals the likelihood of students becoming infected or reinfected with tubercle bacilli became slight.

ATTITUDE OF STUDENTS

After the routine periodic tuberculin testing program was established, the students themselves manifested considerable concern on seeing in their classes approximately twice as many reactors at the end of the senior year as on admission to the school. In the meantime they had observed several of their classmates who had contracted clinical lesions, and some had become seriously ill. Since all such persons were from the group

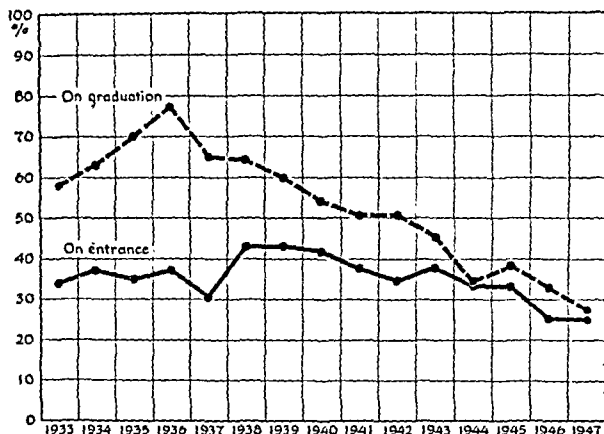


Chart 1.—Percentage of tuberculin reactors among medical students on entrance and on graduation.

of tuberculin reactors, the students came to regard such a reaction as an ill omen. Those who did not react to tuberculin were extremely desirous of avoiding the first infection, while those who reacted on admission to the school were equally desirous of preventing reinfections. They saw a significant number of their classmates become reactors to tuberculin soon after returning from residence in a sanatorium. Thus they felt that adequate protection was not afforded them, and therefore many began to object to such a service. Prior to 1936 the sanatorium service had been compulsory, but that year any student who expressed a desire to omit it was permitted to substitute other work in tuberculosis. In 1937 a large percentage of the students made such a substitution, and in the summer of that year residence in the sanatorium was discontinued. Thus a considerable number of the students who graduated in 1937, the majority in 1938 and all in 1939 and thereafter did not have sanatorium service. An arrangement was made for teaching medical students tuberculosis in a general hospital with a chest disease service operated on a strict contagious disease basis.

In discussions concerning tuberculosis control among students of nursing and medicine the phrase, "unavoidable exposure" has been introduced. While some

5. Myers, J. A.; Diehl, H. S.; Boynton, R. E., and Trach, B.: Development of Tuberculosis in Adult Life, *Arch. Int. Med.* 59:1 (Jan.) 1937. Myers, J. A.; Trach, B.; Diehl, H. S., and Boynton, R. E.: Tuberculosis in Medical and Nursing Hospital Personnel, *Ann. Int. Med.* 11: 2181, 1938.

6. Myers, J. A.; Boynton, R. E.; Diehl, H. S.; Streukens, T. L., and Ch'iu, P. T. Y.: Tuberculosis Among Students and Graduates in Nursing, *Ann. Int. Med.* 14: 873, 1940.

7. Diehl, H. S., and Myers, J. A.: Tuberculosis in College Students, *Tr. Nat. Tuberc. A.* 32: 163, 1936; Tuberculosis Prevention, Immunization and Periodic Health Examinations Among Medical Students, *J. A. Am. M. Colleges* 15: 104, 1940.

exposures are unavoidable, we do not believe that they are unavoidable, and therefore the phrase should be abandoned. The diagnosis of contagious tuberculosis has been so simplified and can be made with such promptness that there remains no excuse for the so-called unsuspected case to expose students in either the inpatient or the outpatient departments of our hospitals. Moreover, a satisfactory contagious disease technic has been developed which provides an excellent barrier between students and known cases of tuberculosis in our hospitals and sanatoriums.⁸ The phrase "unavoidable exposure" suggests a fatalistic point of view or a spirit of defeatism. It seemed almost justified in the early years of our work when the problem was so serious, but today we do not know of a single student who became infected while in school from unavoidable exposure.

RESULTS OF CONTROL PROGRAM

The serious efforts to protect our students which began in 1936 promptly proved effective, as indicated by the decrease in tuberculin reactors on graduation during succeeding years from 77.9 per cent in 1936 to 50.4 per cent in 1941 and 37.4 per cent in 1945 (the table and chart 1).

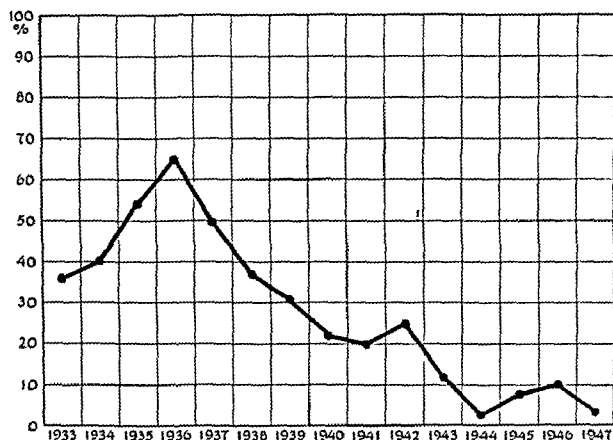


Chart 2.—Percentage of nonreactors to tuberculin among medical students who became reactors during their medical course.

In the table and chart 2 we have presented the percentage of nonreactors to tuberculin on entrance who became reactors during their medical course. In 1936 over 65 per cent of the nonreactors on entrance became reactors while in school. However, when our control program was put into effect there was a rapid decrease of this percentage, reaching 20 in 1941, 7.8 per cent in 1945 and 3.2 per cent in 1947.

The reduction in incidence of primary tuberculosis (tuberculous infection) among our medical students has been accompanied by a decrease in the number of lesions which became large enough to be located by physical examination of the chest, including roentgenographic inspection. This is true among both those who had primary tuberculosis on entrance and those who contracted it while in school. Since fewer students became primarily infected it is probable that a smaller number of reinfections occurred. This leads us to wonder whether exogenous reinfections are not more significant in causing clinical tuberculosis than we had formerly believed.

We regard a characteristic tuberculin reaction (an area of edema or induration of 5 mm. or more in diameter) as diagnostic of the primary type of tuberculosis. In practically all tuberculin reactors dying from any cause primary lesions can be found if post-mortem examinations are done in sufficient detail. However, there is a wide discrepancy between the tuberculin reaction and ability to locate lesions in the living human body by all other phases of the examination, including roentgen inspection of the chest. Only those lesions within the 75 per cent of the lungs visualized on the usual roentgenogram that are large enough and of sufficient density to absorb roentgen rays cast visible shadows. In every person who contracts tuberculosis the disease can be diagnosed by the tuberculin reaction within eight weeks after the bacilli invade the tissues. However, at this time roentgen inspection of the chest rarely reveals any evidence of the disease in more than 5 to 10 per cent of the cases. Later deposition of calcium in primary foci and regional lymph nodes may cast shadows in lesions previously invisible to roentgen rays. Even with this addition it is rarely possible to locate primary lesions of more than 15 to 20 per cent of the persons in whom they exist. Thus the tuberculin reaction constitutes the only method of diagnosing strictly early tuberculosis. At the moment a person becomes a reactor to tuberculin he has tuberculosis just as certainly as the one ill or dead from meningitis or chronic pulmonary disease. The difference is only one of degree. If we had not administered the tuberculin test to our entering medical students but had used all other phases of the examination, we would have obtained an extremely fragmentary picture of the tuberculosis situation among them. If we had not periodically administered tuberculin to those who entered as nonreactors but had used all other phases of the examination, we would now know of few who contracted primary tuberculosis (tuberculous infection) while in school. Thus our work on discovering and controlling the sources of infection and watching for the earliest appearance of reinfection type of lesions among the infected students would have been extremely limited.

There has been considerable controversy with reference to the differences in prevalence of the reinfection type of tuberculosis which develops among students who enter school as reactors to tuberculin and those who become reactors as students. One group contends that those who enter as reactors are immunized, whereas those who become reactors have no immunity and clinical disease is much more prevalent and severe among them. Apparently this controversy hinges on the differences in diagnostic criteria and classification of lesions. Sight is often lost of the fact that every student who becomes a reactor while in school has contracted primary tuberculosis. However, only those in whom demonstrable lesions are found are said to have the disease. Since these students are adults, any roentgen shadow which reveals lesions in their chests has been thought to represent significant reinfection type of tuberculosis. In reality, many of them depict nothing more than primary lesions which are not of clinical significance. Moreover, in some reports persons with nothing more than enlargement of hilus shadows or erythema nodosum have been included in the group said to have contracted clinical tuberculosis.

Sight is also often lost of the fact that students who enter school as reactors have usually already undergone what those who become reactors after entering experience while in school. Primary infiltrates, etc.,

8. Myers, J. A.: Are Nurses and Physicians Protected Against Tuberculosis? *Trained Nurses & Hosp. Rev.* 91:416, 1933. West, C.; Schaller, L., and Myers, J. A.: There Is No Excuse for Tuberculous Infection, *Mod. Hosp.* 59:75, 1942.

have disappeared or been replaced in part by depositions of calcium. Lesions which subsequently appeared among these students are of the reinfection type. Such conditions as fresh primary infiltrates could not be expected to appear among them, and therefore this group presents a smaller number with roentgen shadows.

Much of the controversy, therefore, has resulted from comparing unlike conditions. In 1941 we reported 160 medical students who entered school as tuberculin reactors, and 3.1 per cent contracted reinfection type of lesions while in school or soon after graduation; whereas among 145 who became reactors while in school, in 9.6 per cent demonstrable lesions developed.⁹ This statement might be misinterpreted to mean that more than three times as many students who became reactors while in school contracted tuberculosis as among those who entered as reactors. Actually, this is not true. In fact, of the 9.6 per cent in whom demonstrable lesions were seen, primary complexes and pleurisy accounted for 6.2 per cent; whereas only 3.4 per cent contracted the chronic reinfection type of tuberculosis. Thus, only the 3.4 per cent is comparable with the 3.1 per cent among the students who entered as reactors in whom clinical lesions developed.⁹ Throughout our studies we have been unable to find any significant difference in the development of the chronic reinfection type of tuberculosis among those entering as reactors and those who became reactors while in school.

In the earlier years of our work it was commonplace to diagnose and treat clinical tuberculosis among the medical students. The disease ranged from pleurisy with effusion to progressive pulmonary disease and extrathoracic lesions. Some of the students who were infected or reinfected ultimately died from tuberculosis. However, during the past four years only 1 student contracted a demonstrable lesion while in school. He had tuberculosis on admission to the medical school, as indicated by the tuberculin reaction. He had been sensitive to tuberculin since the age of 14 years. However, by no phase of the periodic examinations, including roentgenographic inspections of the chest, were we able to locate the lesions through March 1946. In December of that year immediately before his graduation a lesion in the upper lobe of the left lung had evolved to such size and density as to cast a definite roentgen shadow. No sputum was produced, but acid-fast bacilli were recovered from gastric washings. This case—the first in four years—created considerable excitement on the campus. The attitude of the faculty and the student body was in sharp contrast to that of a decade before when so many students contracted clinical disease that any new case was almost unnoticed except by those trying to solve the problem. Similar tuberculosis control measures have been applied in a school of nursing with almost identical results.¹⁰

Our tuberculosis control program has had an exceedingly worth while educational value among the students. Between the annual examinations many of the nonreactors test one another or request the test in the clinics where they work or even administer tuberculin to themselves. Through an oversight one of our classes graduated without tuberculin having been administered to the nonreactors in the health service in the senior year. A questionnaire revealed that nearly all of them had been tested elsewhere just before gradu-

ation. In the same class the senior year roentgen inspection of the chest was overlooked. However, all of the reactors had taken the matter in hand and arranged for roentgenograms of their chests. Tuberculosis has become a personal issue among the students. They strive to learn all diagnostic procedures and apply them to patients at every opportunity. On detection of tuberculous lesions they seek for their patients the best therapeutic procedures and arrange for control of contagion.

DIAGNOSIS OF PRECLINICAL CANCER OF THE CERVIX

Cervical Cone Knife: Its Use in Patients with a Positive Vaginal Smear

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Recent advances in methods of cancer detection by Papanicolaou's¹ vaginal smear and the subsequent development of the "surface-biopsy"² cell-scraping method offer a valuable method of uterine cancer control through early diagnosis. A danger exists, however, that the method might fall into disrepute if hysterectomy were widely practiced on the basis of a cytologic diagnosis alone. Especially could this become true if inexperienced and inadequately trained cytologists were to influence the surgeon's judgment unduly. It therefore seems indicated that every effort to confirm a positive cell diagnosis by biopsy be made before subjecting the patient to radical treatment.

The sensitive "surface biopsy" method, when applied routinely, is bringing to light more and more cases of preclinical cervical cancer. This poses a genuine problem for the surgeon or gynecologist in attempting to confirm the cell diagnosis by cervical biopsy. The work of Novak,³ Schiller,⁴ Pund and Auerbach⁵ and others indicates fairly general agreement that the squamous margin of the squamocolumnar junction is the point of origin of the common squamous cervical cancer. Diagnosis by "surface biopsy" cell study adds further confirmation to this concept. Following a cytologic report of positive results with the "surface biopsy" method and in the absence of a focal lesion clinically, it becomes difficult to decide in which part of the squamocolumnar junction a minute lesion is developing. Frequently the first and the second biopsy may have negative results, and even serial sections may be required to confirm the cell diagnosis of cancer. A danger rests in the possibility that a negative result of biopsy, with no further investigation, may lead to fatal delay, permitting the cancer to develop into a clinical and inoperable cancer before treatment is instituted. On the other hand, it is almost equally important to prevent needless major operation. It is, therefore, of importance that an efficient method of obtaining a true evaluation of growth in the cervix by adequate biopsies be found.

No problem exists in the confirmation by biopsy of the clinically evident carcinoma. Indeed, in the past this has been the stage when most patients with cervical cancers have reached the operating table, often too late

9. Myers, J. A.: Tuberculosis in Hospital Personnel, *Dis. of Chest* 12:354, 1946.

10. Boynton, R. E.; Diehl, H. S., and Myers, J. A.: Prevention of Tuberculosis Among Students of Nursing, *Am. J. Nursing* 47:661, 1947.

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From the Cancer Research Division, Gynecology Laboratory, Royal Victoria Hospital, McGill University, Montreal.

1. Papanicolaou, G. N., and Traut, H. F.: *Am. J. Obst. & Gynec.* 42:193, 1941.

2. Ayre, J. E.: *Am. J. Obst. & Gynec.* 52:609, 1947.

3. Novak, E.: *J. A. M. A.* 108:1145, 1937.

4. Schiller, W.: Personal communication to the author.

5. Pund, E. R., and Auerbach, S. H.: *J. A. M. A.* 121:960, 1946.

for cure. The preclinical cancer presents a different problem. The sensitivity of the "surface biopsy" cell-scraping in cancer detection places in the surgeon's hands many early cancerous conditions in which the lesion is microscopic in size. In approaching the problem of confirmation by biopsy in such a case, the following factors must be borne in mind:

1. The squamous cancer develops at some point in the squamous margin immediately adjacent to the glandular cervical epithelium. The cancer is, therefore, on the most exposed part of the cervix, and trauma, even a light sponging of the cervix before biopsy, may wipe off enough of the tiny growth so that the pathologic evidence may be lost without the entire growth's being removed.

2. The usual unavoidable trauma, such as cervical dilatation, may macerate the cervix at the junctional region, causing loss of the friable neoplastic tissue, thus altering the course of treatment.

3. In the absence of a focal lesion, visually demonstrable, it may be impossible to decide which lip and, indeed, which segment to select for biopsy.

4. After the biopsy specimen is taken, special care of the sample should be taken to prevent the friable surface cells of the lesion from breaking away and being lost.

In order to give a true evaluation of tissue in this early stage, it is advisable to excise the entire squamocolumnar junction before it is subjected to trauma of

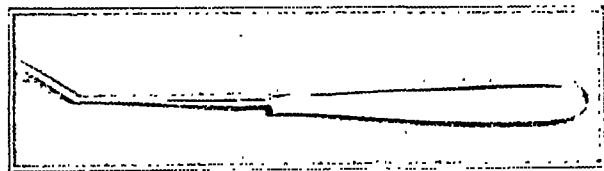


Fig. 1.—Ayre's surgical cone knife (Clay-Adams Company, Inc., 44 East Twenty-Third Street, N. Y.)

any kind. In different cervixes, depending largely on parity and the presence of erosions, the squamocolumnar circle may vary from a diameter of 0.5 cm. to 2 inches (5 cm.). The larger the eroded area, the larger the squamocolumnar circumference. Electrocoagulation is a good method of prophylactic therapy and of obtaining a biopsy specimen, provided that the anatomic structure of the squamocolumnar junction is just right. However, the large percentage of cases in which there is an enlarged and irregular squamocolumnar margin render it unsuitable for biopsy purposes, because a portion of the squamous margin may be missed or because a portion of it may be destroyed by the heat, and the tissue interpretation may, therefore, be erroneous.

In an effort to evolve a nontraumatic surgical instrument to remove the entire squamocolumnar circle of tissue, the surgical cone knife (fig. 1) was developed. Proper application of this instrument permits the excision of the entire squamous margin of the junctional region without necessitating a cervical amputation or a hysterectomy. Multiple or serial sectioning of this ring of tissue enables a precise and accurate diagnosis of squamous cancer in the cervix.

INSTRUCTIONS FOR USE OF THE CONE KNIFE

The narrow blade of the cone knife possesses a dual cutting edge, which renders it highly adaptable to controlled excision of selected tissues. The cervix should be adequately exposed and held in position by anterior and posterior tenacula; then, preceding any surgical dilata-

tion or other trauma to the junctional region, the blade is inserted into the tissues $\frac{1}{4}$ inch (0.64 cm.) outside the squamous margin of the squamocolumnar junction, with the blade directed toward the cervical canal. Light pressure on the blade causes the point to penetrate the tissues, the point of the knife on reaching the center of the circle becomes visible in the cervical canal (fig. 2). The blade is then gently maneuvered through the entire circle, care being taken that the blade be guided around the cervix at a constant distance from the squamous margin, regardless of possible irregularity or asymmetry of its circumference. This permits excision of the entire squamous margin with a fairly superficial quantity of the subepithelial tissue and a small collar of the glandular endocervical epithelium. Following the removal of this collar of tissue, which gives the entire circle of the squamous margin for multiple biopsy, the tissue is laid out in a single strip, and in some cases it may be advisable to embed it in the paraffin before permitting any further tissue sectioning. After the circular biopsy specimen is obtained, the usual surgical management follows. Moderate bleeding may, and usually does, occur following the excision. An excellent method of both controlling the bleeding and providing addi-

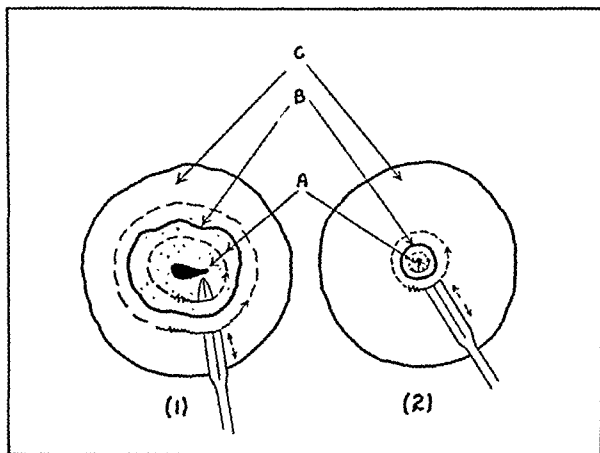


Fig. 2.—Diagrammatic representation of uterine cervix with cone knife in operation: (1) Eroded type, showing large squamocolumnar circumference (B). (2) Normal-appearing type, showing small squamocolumnar circumference near cervical os. A, endocervical glandular epithelium, B, margin of squamous epithelium (squamocolumnar junction) and C, squamous epithelium of cervix. The pointed blade with the dual razor-sharp edges is inserted into the cervix 0.5 cm. distal to the margin of the squamous epithelium, being directed toward the center of the cervical circumference. A circular "ring" of tissue is excised, removing the entire squamocolumnar junctional zone for biopsy. Preclinical squamous cervical cancer will be found, if present, in the clear nonstippled portion of the excised collar of tissue.

tional prophylactic therapy is to follow the surgical conization by electrocoagulation. This removes a second cone of tissue, seals off the lymphatic vessels and at the same time controls points of hemorrhage. On the other hand, a Sturmdorff amputation, or a cervical amputation of whichever type may be selected, may follow the careful excision and preservation of the biopsy material.

COMMENT

To avoid needless radical surgery and treatment and yet to insure adequate protection of the patient against cancer and to preserve the valuable function of cytologic study in cancer detection, the following steps are recommended as a logical sequence to a positive result of a cytologic test:

1. In the presence of a suspicious cervical lesion, a biopsy specimen should be taken from this area and a sample of endometrium obtained.

2. In the presence of a clinically obvious carcinoma of the cervix, a confirmatory biopsy may be made immediately preceding the application or insertion of radium.

3. In the presence of a cervical condition which appears benign, with no suspicious lesion, the procedure is more difficult. This is the type of condition being discovered with great frequency with the routine "surface biopsy" scraping method. The experienced cytologist is usually able to state whether the cancer cells are of the usual squamous type or of the less frequent glandular type. If the cells are of the squamous type, the surgical cone knife comes into play and the squamocolumnar circle is excised, giving a "ring biopsy." The second step is electrocoagulation. A sample of endometrium is also obtained for biopsy purposes. If the cells prove to be of glandular type, a curettage of the endometrium and of the cervical canal for biopsy should be made.

4. In large erosions and lacerations, when the squamocolumnar circumference is large and irregular, a Sturmdorff amputation may be indicated initially or following excision of suspected parts of the squamous margin for biopsy.

5. In rare instances when the cytologic evidence is conclusive in the opinion of an experienced cytologist, while results of biopsies are repeatedly negative, a total hysterectomy may be considered if the patient is past her childbearing period.

6. In rare instances, in which results of cytologic study are positive and conclusive, while results of biopsies are negative, and the probability is entertained that a rare tubal or ovarian malignant condition may exist, laparotomy and a possible hysterectomy may be considered.

7. In cases in which fundal carcinoma is suspected on the basis of positively reacting cells of a glandular type, an endometrial biopsy specimen should be obtained for confirmation preceding surgical extirpation or radiation therapy. The treatment, therefore, still rests on the observations of biopsy with one possible exception. A problem is posed: How radical should one be in the treatment of preclinical carcinoma and preinvasive carcinoma of the cervix?

8. In preclinical carcinoma of the cervix, which has not yet reached clinical stage I, it is my contention that a good panhysterectomy may be adequate (except in the rare case in which the lesion has extended up into the canal and may have spread more than is apparent in a lateral direction. The disease in such a case is, of course, beyond the preclinical stage and is actually in stage I or II, demanding treatment accordingly).

9. In the preinvasive cervical cancer (intraepithelial carcinoma or carcinoma in situ), especially during the childbearing period, how radical or how conservative should one be? The cone knife permits serial sectioning to determine proof of actual preinvasiveness. Therefore, in such cases, it is my contention that a Sturmdorff amputation may prove adequate and a total hysterectomy may not be necessary. Such cases, obviously, should be followed up assiduously. The great sensitivity and accuracy of the "surface biopsy" method in following up these cases month by month and year by year should permit an early enough recognition of cells indicating recurrence to give a "second chance," permitting hysterectomy or radiation therapy before dangerous spread occurs.

SUMMARY

The vaginal smear and "surface biopsy" methods offer valuable means of uterine cancer control by early detection.

Indiscriminate hysterectomy on the basis of positive smears without biopsies may cause this important advance in diagnosis of cancer to fall into disrepute.

The cervical cone knife is presented as a practical instrument to permit precision biopsies of the squamocolumnar junction in preclinical cervical cancer, introducing the "ring biopsy."

For the patient with a positive vaginal smear a confirmatory biopsy preceding radical treatment is mandatory to safeguard the future reputation of this valuable advance in uterine cancer control. Various steps in diagnostic treatment are recommended for consideration.

TREATMENT OF STERILITY; INSEMINATION
TIMED BY RAT OVULATION TEST

Report of Thirty-Two Cases

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and

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In a previous communication,¹ we reported on ten conceptions following the use of the rat ovulation test² for the timing of intercourse or insemination.

The present paper also deals with the use of the same test. In this instance, it was employed in order to predict the day for the insemination of a series of 32 women. The observations throw light on the value of the method as an aid in the timing of insemination and also indicate the frequency with which certain infertile women may experience abnormal ovulation reactions.

MATERIALS AND METHODS

Couples who sought assistance, because the wife either had never conceived or, having done so, had failed to do so for a long time thereafter, form the basis for this report.

Each couple was studied primarily from three points of view: (1) sperm status of the husband, (2) patency of the wife's fallopian tubes and (3) character of the wife's ovulation process.

Sperm Status of Husband.—The investigation of each couple was begun by a study of the sperm status of the husband.³

After five days of sexual abstinence, he procured an ejaculate by masturbation. This was expelled into a sterile wide-mouthed bottle. The number of moving sperm cells in the entire ejaculate was determined. This was done by diluting seminal fluid 1:20 with Locke's solution in a pipet for white blood cell counting and examining it under the microscope on a field for red blood cell counting. The number of moving sperm cells per cubic centimeter of the ejaculate was computed. From this figure, it was possible to determine the number in the total ejaculate. The resulting figure was employed to designate the degree of fertility of the husband.⁴

From the Gyneccean Hospital Institute of Gynecologic Research, University of Pennsylvania, and the Wistar Institute of Anatomy and Biology. Aided by grants from the Committee on Research, Council on Pharmacy and Chemistry of the American Medical Association and the Samuel S. Fels Fund.

1. Murphy, D. P., and Farris, E. J.: Conception Following the Day of Ovulation with the Rat Test, *Am. J. Obst. & Gynec.* 54:467, 1947.

2. Farris, E. J.: A Test for Determining the Time of Ovulation and Conception in Women, *Am. J. Obst. & Gynec.* 52:14, 1946.

3. Farris, E. J.: An Improved Method for Semen Analysis, *J. Urol.* 58:85-88, 1947.

4. Farris, E. J.: The Number of Motile Spermatozoa as an Index of Fertility in Men: A Study of 406 Semen Specimens, to be published.

Patency of Fallopian Tubes.—The degree of patency of the wife's fallopian tubes was established either by tubal insufflation or by hysterosalpinography. The latter method is preferred and was used oftenest.

Ovulation Process.—The probable day of ovulation was detected by the rat test as developed by one of us (E. J. F.).¹ The ovulation reaction of each woman was studied for at least two months and in some cases over a period of many months. The first test was made as a control; during this month insemination was not attempted. It was performed, however, during the first month in which there was a normal or a reasonably satisfactory reaction.

Insemination Technique.—The number of moving sperm cells in the specimen employed for insemination was determined. This was done within an hour and the insemination within two hours of the ejaculation.

The wife was placed on the examining table in the lithotomy-Trendelenburg position. The cervical os was exposed with a bivalve speculum. The seminal fluid was drawn into a 2 cc. tuberculin syringe to which was attached a Bower's antrum cannula. The latter was inserted into the cervix with the expectation of just passing the internal os. In cases in which this was impossible, it was passed to the point where it met resistance. An attempt was made to inject 0.25 cc. of the fluid. Prior to the start of the treatment, the patient was asked to report any sensation in her pelvis which the injection might

Unsuccessful Inseminations

Explanation	Number of Inseminations
Low sperm count.....	19
Abnormal ovulation	18
Insemination too early.....	3
Insemination too late.....	2
Tubal abnormality	3
Unusual menstrual cycle.....	1
Unexplained	1
Total	47

initiate. The treatment was stopped if she experienced any sensation whatever. As the cannula was being withdrawn, additional fluid was injected along its path.

The blades of the speculum then were closed until they touched the walls of the cervix. A wad of cotton was inserted between the perineum and the handle of the speculum, in order to depress its vaginal end. This maneuver tends to bring the cervix into a position more at right angles to the posterior blade of the speculum, so that the external os faces and is close to the tip of the posterior blade.

The remainder of the seminal fluid was poured down the posterior blade of the speculum, in order to cover the cervical os. The patient remained in the lithotomy-Trendelenburg position, with her cervical os immersed into the seminal fluid for a period of thirty minutes. At the end of this time, the excess semen in the vagina was removed and the patient was discharged.

RESULTS

Inseminations Resulting In Conception.—Fifty-seven inseminations were performed on 32 women. Ten resulted in conception. Eight of the 10 women conceived as a result of the first treatment; the remaining 2 women conceived on their second inseminations.

Inseminations Failing to Result In Conception.—Forty-seven inseminations failed in their objective (table). Thirty-seven (79 per cent) of the 47 failures were charged to either an inadequate number of moving sperm cells or abnormal ovulation. Each of the failures in these two categories was predicted before the insemination was performed.

Five unsuccessful inseminations were carried out either on the day before or the day after that on which ovulation was predicted. These dates were selected in order to test the validity of the assumption that conception requires that insemination be performed on the predicted day of ovulation.

Three failures are attributed to tubal abnormality. These included either narrowing of both tubes or blockage of one of them.

One patient experienced a menstrual cycle of about forty-five days. Insemination was performed on the twenty-eighth day of her cycle. The variable length of the cycle of this woman, together with the abnormal character of her ovulation reaction during the month of insemination, probably accounted for the failure of her treatment. It should be mentioned at this point that each patient had insemination only once each month.

COMMENT

The patients represented a selected group of infertile couples. They had been treated unsuccessfully by others, and there appeared to be no gross reason why they should not have had children.

When the husband has a high sperm count and the wife ovulates normally, it is our custom to recommend intercourse rather than insemination on the day of ovulation as indicated by the rat test. Insemination was chosen in preference to intercourse in this series of cases for a number of reasons. Many of the couples were well advanced in their reproductive age and were eager to have a child as soon as possible. Many of the husbands had sperm counts that were close to or below the fertility level. Many of the wives ovulated abnormally a great part of the time. In view of all of these observations, insemination appeared to offer the best means for securing conception.

The attempt was made to perform insemination in each case during a month when the patient experienced a normal ovulation reaction. In some cases the patient rarely ovulated normally. In such instances, insemination was carried out during a month when the ovulation reaction was not ideal.

In many cases the husband had a low sperm count and the wife's ovulation reaction was unsatisfactory. In such circumstances, it was unlikely that insemination would be successful. It was carried out reluctantly in these cases at the insistence of the couples concerned. In 1 case, for example, insemination was carried out unsuccessfully five times. The husband's sperm count was so low each time that conception was deemed out of the question.

Two facts stand out from the present study. One of these is the high frequency with which conception occurred on the first insemination. The fact that eight out of ten of the conceptions followed the first insemination seemed to speak well for the accuracy of the rat ovulation test as a method for predicting the day when the egg is available for fertilization.

The second point concerns the high incidence of low sperm counts and of abnormal ovulations in the series. In some cases, both played a role in preventing conception.

When one excludes the failures to conceive which were predicted before insemination was undertaken, it would appear that conception was achieved in an extremely high percentage of cases.

BRUCELLOSIS AS A CAUSE OF SACROILIAC ARTHRITIS

A Study of Its Relationship to Rheumatoid Spondylitis

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Knowledge by physicians of bovine brucellosis as it affects cattle is almost zero. This paucity of knowledge is further complicated by the many accepted fallacies regarding epidemiology, clinical history and control of infection in animals and man. Better dissemination of present day knowledge and more research are needed for a disease which affects 30,000 to 40,000 persons annually in the United States.¹ Physicians generally hold to the idea that infected cattle are destroyed. This is not true. It is economic suicide and a practical impossibility to eradicate bovine brucellosis by slaughter of infected cattle. The generally accepted method of control of this infection in animals by veterinarians is by vaccination of calves and adult cows with strain 19.² The adult pregnant cow should be vaccinated before the fourth month of pregnancy; sanitary procedures and immediate ultimate removal of all animals showing a titer of 1:100 or higher are required for control of this disease. The hygienic habits of cows are such that one infected animal may easily infect an entire herd in a short period of time. Pasteurization of milk and dairy products for human subjects is the only practical method available in view of the confusing and complex picture regarding the ubiquitous existence of this infection in cattle.

The symptoms of brucellosis are so varied that a patient presenting himself or herself is often labeled neurasthenic. One may list any symptom from headache to constipation and be able to fit the picture in with that of chronic brucellosis. The typical wavelike fever is often likened to the initial phase of typhoid. This will be shown in the report in this article of a case of extremely severe brucellosis. Aches and pains in joints are often noticed. Most often no true arthritis accompanies the articular symptoms. The acute phases of brucellosis, whether starting as an acute disease or an acute flare-up of a chronic disease, are similar to that of typhoid except that the entire story is accelerated. The finding of a positive blood culture is conclusive evidence. An agglutinating titer which fluctuates with the disease is also conclusive evidence. A negative agglutinating titer is of no significance. A positive reaction to a cutaneous test for brucellosis should be interpreted in the same manner as a positive tuberculin reaction. The opsonocytophagic test is of questionable value.

Rheumatic (arthralgia) manifestations usually appear in the later subacute stage of the disease. The agglutinating titer is most often elevated in the rheumatic stage, indicating some degree of immunity. On the other hand, hot swollen joints and/or synovitis are a rare complication. Hardy and others³ in a reported

series of cases of undulant fever found arthralgia in 32 per cent and evidence of actual inflammation of joints in less than 2 per cent. Green and Freyberg⁴ concluded that arthralgia is a common symptom of brucellosis but that arthritis is a rare complication. Huddleson⁵ and others classified the rheumatic manifestations as fibrositis, neuritis, synovitis, arthritis and spondylitis. Synovitis usually occurred suddenly, the patient awakening with intensely painful swelling of the joints but absence of local redness. The attack of synovitis lasted from twenty-four to forty-eight hours and usually cleared up within a week. Fluid obtained from these joints was sterile and contained an excess of lymphocytes. The knees, ankles, elbows, wrists and fingers were usually involved. Arthritis was more frequently encountered than synovitis. It usually occurred in the subacute stage and lasted a longer period. It was usually monoarticular, and simu-



Fig. 1.—Roentgenogram taken Dec. 20, 1947, revealing destructive changes in the left sacroiliac joint. There is a loss of definition of the articular margin and a definite oval area of destruction in the bone near the upper part of the joint. This area measures 1 cm. in diameter.

lated tuberculous disease of the hips when it occurred in children. In a series of 100 cases these authors found the following articular involvement: ankles 40 per cent, elbows 10 per cent, hips 25 per cent and sacroiliac joints 4 per cent. They stressed the absence of roentgenographic findings in these cases. The exception to this statement is spondylitis, in which Phalen and others⁶ described destructive lesions of the lumbar vertebrae in 3 cases of spondylitis due to brucellosis. They expressed the belief that spondylitis is probably the most common complicating disorder of the bones and joints referable to undulant fever. These authors agreed that spondylitis as a complication of undulant

1. Brucellosis in the United States, Current Comment, J. A. M. A. 134:786 (June 28) 1947.

2. Dykstra, L. A.: Advantages of Vaccination Against Bovine Brucellosis, J. Am. Vet. M. A. 110:96 (Feb.) 1947. Haring, C. M.; Traub, J., and Maderious, W. E.: Vaccination Against Brucellosis, *ibid.* 110:103 (Feb.) 1947.

3. Hardy, A. V.; Jordan, C. F.; Borts, I. H., and Hardy, G. C.: Undulant Fever with Special Reference to Study of Brucella Infection in Iowa, Pub. Health Rep. 45:2433 (Oct. 10) 1930.

4. Green, M. E., and Freyberg, R. H.: Incidence of Brucellosis in Patients with Rheumatic Disease, Am. J. M. Sc. 201:495 (April) 1941.

5. Huddleson, I. F.: Brucellosis in Man and Animals, New York, Commonwealth Fund, 1943.

6. Phalen, G. S.; Prickman, L. E., and Krusen, F. H.: Brucellosis Spondylitis, J. A. M. A. 118:859 (March 14) 1942.

fever is most likely to occur in the subacute stage but stated that it may occur as early as three weeks after the onset of symptoms or may be delayed as long as one year. Huddleson⁶ has reported intermittent hydroarthritides as a complication of undulant fever. Palagi⁷

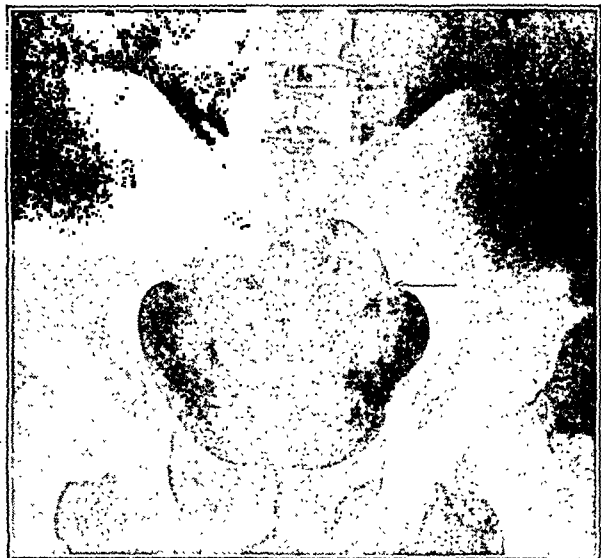


Fig. 2.—Roentgenogram taken at same time as figure 1.

collected 29 cases of spondylitis due to brucellosis from the literature and added 17 of his own cases.

Although many of the authors cited sacroiliac arthritis as occurring as a complication of brucellosis, a careful search of the literature fails to reveal a single report of such a complication. The following report is, therefore, of unusual interest.

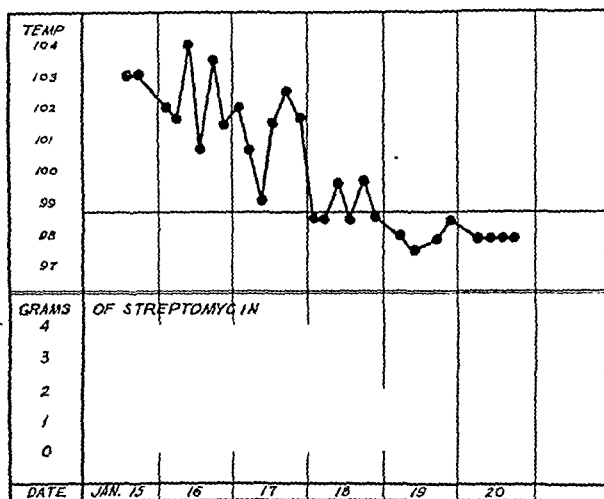


Fig. 3.—Showing temperature response of patient M. C. to streptomycin therapy. Four grams of streptomycin was given in divided doses of 0.5 Gm. at three hour intervals.

REPORT OF CASE

M. C., a veterinarian aged 30, was first seen in December 1946. The onset of the present illness began in the summer of 1941. The first symptoms noticed were headache, undue

fatigue and leg aches. He would arise in the morning feeling rather well. A few hours later aches would start in the legs and would be associated with a mild degree of fatigue. Moderate headache would start late in the afternoon and would become intense by night. The leg aches and the degree of fatigue would increase decidedly as the day progressed. The patient himself suspected brucellosis in that he had been working in herds of cows in which the degree of brucellosis infection was as high as 50 per cent. He admitted coming in contact often with infected material from the placenta of aborting cows. The cutaneous test for brucellosis was markedly positive in result. Agglutinating titer was positive, 1:40, on May 10, 1941 and 1:160 on May 12. The symptoms of fatigue, leg aches and headaches continued for two weeks and were unassociated with fever. These symptoms recurred yearly. He consulted an eye physician on several occasions because of the severe headaches. He was informed on each occasion that nothing was wrong with his vision.

The next change in his clinical picture occurred in March 1946, at which time he had pain in the left "hip" on and off

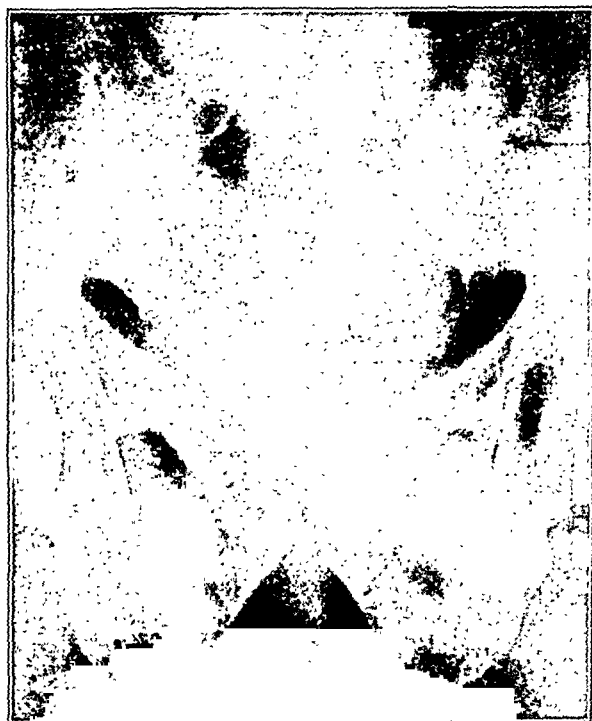


Fig. 4.—Roentgenogram taken Jan. 31, 1947, showing partial healing of the area of destruction previously found in the left sacroiliac area. (This view seems to show ankylosis occurring. However, figure 6 definitely shows that this is not the case.)

for a period of two months. Chills and fever were first noted in April. This febrile phase lasted for eight days. Agglutination for *Brucella abortus* and reactions to cutaneous tests were positive. The symptoms subsided completely after eight days and the patient felt comparatively well until August, at which time he experienced pain in the left "hip," the region of the coccyx and in the right upper quadrant of the abdomen. These symptoms gradually subsided in one month. The next recurrence was in November, at which time severe pain developed in the left sacroiliac area. He was treated with brucella vaccine in dilution of 1:10 subcutaneously. Each injection was followed by a severe reaction of pain in the left sacroiliac area. Whirlpool bath treatment of the lower extremities and heat locally to the left sacroiliac area aggravated the condition. He had to use crutches the latter part of December owing to severe pain in the left sacroiliac area. Examination on December 20 revealed a well developed, well nourished white man

7. Palagi, P.: Le localizzazioni vertebrali nelle febbre ondulate, *Chir. d. org. di movimento* 20: 31, 1934; cited by Phalen, Prickman and Krusen.⁶

whose nude weight was 164½ pounds (74.6 Kg.), height 5 feet 11 inches (180.3 cm.), standard weight 166 pounds (75.3 Kg.), temperature 98.6 F., pulse rate 76 and blood pressure 100 systolic and 70 diastolic. The pupils reacted to light and accommodation. Tonsils have been removed. Roentgenograms of the teeth and gross appearance of the teeth and gums were negative. The posterior part of the pharynx appeared innocent. Examination of the neck, lungs, heart and abdomen revealed no abnormality. Normal motion was present in all joints, but there was extreme tenderness over the left sacroiliac area. The knee jerk on the left side was diminished as compared to the right side. Sensation to heat, cold, pain and touch was normal throughout.

The urine was normal. The red blood cells were 5,710,000, the hemoglobin 16.9 Gm., the white blood cells 9,750. The Schilling differential count revealed stabs 6, segmented cells 60, lymphocytes 20, monocytes 4 and eosinophils 3 per cent. The sedimentation rate was elevated at 25 mm. per hour.

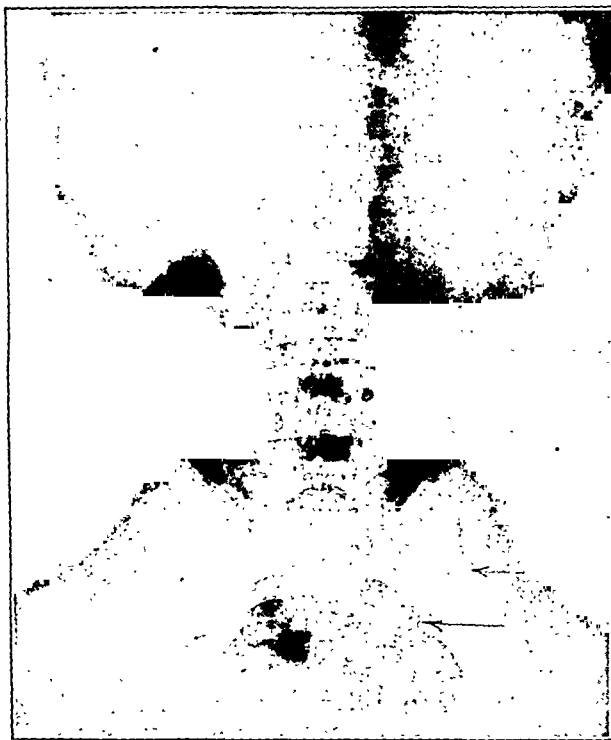


Fig. 5.—Roentgenogram taken at same time as figure 5.

The upper limit of normal by this method is 10 mm. per hour. The blood uric acid was normal at 3.4 mg. per hundred cubic centimeters. Throat culture revealed a rare *Streptococcus viridans* organism. Agglutination for *Brucella abortus* was positive in a titer of 1:320. Five localized areas of healed scars measuring 4 mm. by 4 mm. in diameter were present on both forearms as a result of the vaccine that the patient had received some weeks previously. These indicated the severe nature of reaction that the patient had to the *B. abortus* vaccine. Roentgen examination of the lumbosacral revealed the following (figs. 1 and 2): "Lumbosacral spine: There are five lumbar vertebrae. The alinement of the bones is good, with a normal degree of lumbar lordosis. The intervertebral disks, centra and intervertebral articulations are well visualized and appear normal. Lumbosacral articulation is normal.

"Definite destructive changes are noted in the left sacroiliac joint with loss of definition of the articular margins and a definite oval area of destruction of the bones near the upper border of the joint, which measures 1 cm. in diameter. Widening of the joint space of the left sacroiliac joint is also evident

at its lower margin and there appears to be definite destruction of the articular surfaces in this area. The sacrum and coccyx are otherwise normal. The hip joints are normal.

"Radiographic conclusions: The findings are those of destructive changes in the left sacroiliac joint. This lesion is probably



Fig. 6.—Oblique roentgenogram of left sacroiliac area shows no evidence of ankylosis.



Fig. 7.—Roentgenogram taken at same time as figure 6.

secondary to a bacterial infection and may be consistent with brucellosis involving the joint."

The patient was treated symptomatically and with complete bed rest. The symptoms gradually subsided under this management until Jan. 14, 1947. A shaking chill of one and one-half hours' duration developed, and his temperature rose to 104 F.

on this date. This episode was repeated on Jan. 15, 1947. On the latter date streptomycin was started. He was given 0.5 Gm. of streptomycin intramuscularly every three hours. An initial blood culture was negative, and agglutination for *B. abortus* which was taken this day and reported two days later was positive in dilution of 1:640 titer. The response of the temperature curve and the amount of streptomycin given are shown in graph form in figure 3. A palpable spleen was felt on January 16 and January 17. Rose spots not unlike those of typhoid appeared on the abdomen on the later date. On January 22 the patient reported feeling fine and having practically no pain in the sacroiliac area. On February 12 he began to have a low grade fever (100 to 101 F.) in the afternoon. The temperature returned to normal three days later. It has remained normal ever since. At that time the soreness increased in the left sacroiliac area. This apparent flare-up was precipitated by allowing the patient out of bed. A roentgenogram of the lower part of his back was taken on January 31. A roentgenogram of the lumbosacral portion of the spine, taken Jan. 31, 1947, revealed the following (figs. 4 and 5):

"Lumbosacral spine: The area of destruction previously reported in the lower margin of the left sacroiliac joint and near the upper margin of the sacroiliac joint are again seen as have been previously reported. Both areas of destruction are slightly larger in this examination than on the previous

Laboratory Data on Patient M. C.

Date	Sedimentation Rate	Titer	Blood Culture	Remarks
12-2-1946	25 mm. per hour	1:320	.....	Roentgenogram
1-13-1947	28 mm. per hour	1:640	Negative	Comfortable
1-14-1947	.....	.....	.....	Chill and fever
1-15-1947	.....	1:640	Negative	Streptomycin started
1-22-1947	.....	1:1,280	.....	.....
1-31-1947	23 mm. per hour	1:1,280	.....	Roentgenogram
2-19-1947	31 mm. per hour	1:640	Negative	.....
3-12-1947	9 mm. per hour	.....	.....	Comfortable

examination. The intervening positions of the sacroiliac joint show loss of definition and there is a suggestion of bony trabeculae traversing the joint space.

"No other significant abnormality is demonstrable in the lumbosacral spine. Radiographic conclusions: The area of destruction previously reported in the left sacroiliac joint are again evidenced. Since the preceding examination a suggestive area of 'ankylosis' has developed in the midportion of this joint. This would be consistent with partial healing of the pyogenic arthritis of this joint."

Oblique roentgenograms of the sacroiliac joints taken failed to reveal true ankylosis (figs. 6 and 7).

The low grade fever reported February 12 disappeared at the end of three days. Clinical improvement has been constant ever since.

COMMENT

The diagnostic possibilities in this case are: (1) neoplastic disease, (2) sacroiliac arthritis due to *Br. abortus* infection, (3) sacroiliac arthritis due to tuberculosis, and (4) early involvement of the sacroiliac joint as an early sign in rheumatoid spondylitis. Neoplastic disease may be ruled out because of localization of disease to the joints and the duration of the illness and the laboratory findings. This patient was a veterinarian and might be easily infected with bovine tuberculosis. Tuberculin tests and roentgenograms of the lungs were negative in result. Also, the history indicates that the patient first began to have some discomfort in his left sacroiliac joint a year before the present period of

hospitalization. These symptoms lasted a short while, and then a period of ten months elapsed without any symptoms. When the pain recurred, ten months later, it was of a most severe nature. This long interval of freedom of symptoms in the back is against any possible diagnosis of tuberculosis. The factors in favor of a diagnosis of *Br. abortus* infection are overwhelming in spite of the fact that four attempts to obtain a positive blood culture were futile. The patient admitted having delivered calves from aborting cows. And although it is common for veterinarians to wear long gloves in such procedures, it must be remembered that the position of the accoucheur at the tail end of the cow is such that infection may easily enter the gastrointestinal tract. A not too vivid imagination is required to appreciate this point. The rise in agglutinating titer from 1:320 to 1:1,280 for *Br. abortus* is of diagnostic significance. The fact that 0.1 cc. of 1:10 *Br. abortus* vaccine given subcutaneously caused extreme areas of necrosis is of some significance. The opsonocytaphagic test is of such questionable significance that it was not done in this case. The localization of the disease in the sacroiliac joints with subsequent healing as shown by the second roentgenogram taken on Jan. 31, 1947 suggested the possibility that *Br. abortus* might be an etiologic agent in rheumatoid spondylitis. There are several decided differences, however, in the roentgenograms of this case and those of rheumatoid spondylitis. One never sees areas of destruction in the joints as shown in both figures 1 and 3 in this case. Also, there is more production of bone in the sacroiliac area and not destruction of bone in rheumatoid spondylitis. It might be argued that at least in some instances sacroiliac arthritis, which has previously been thought to be a part and parcel of the syndrome of rheumatoid spondylitis, might be due to this organism.

Twenty cases of rheumatoid spondylitis were reviewed by me. Blood cultures, blood agglutination tests and cutaneous tests for brucellosis were performed in 20 cases of typical rheumatoid spondylitis. Blood cultures were negative in all 20 cases. Cutaneous tests for brucellosis were negative in 20 cases. The agglutinating titer for *Br. abortus* was weakly positive in 2 cases. One patient, aged 27, gave a seventeen year history of *Br. abortus* infection. The agglutinating titer was positive in 1:20 titer. Cutaneous tests and blood cultures were negative in result. Roentgen examination of the lumbosacral area of this patient showed blurring of the sacroiliac joints with production of bone on either side of the joints. The findings were considered to be typical of early rheumatoid spondylitis. No involvement was found in the spine. Another patient, aged 32, was given a diagnosis of rheumatoid spondylitis. He showed typical changes in the sacroiliac joints and had lost his lumbar curve. This person's reactions to cutaneous tests and blood cultures were negative for *Br. abortus*. He gave a positive agglutinating titer in a serum of 1:20. One month later this was repeated and found to be 1:40. None of the 20 patients showed destructive regions in the sacroiliac area shown by patient M. C. It might be safely concluded that rheumatoid spondylitis is not caused by *Br. abortus* infection. There might be isolated instances in which sacroiliac arthritis is caused by this organism just as in the case reported here.

However, the bone production of the joints, the tendency for the poker back spine, the involvement of the apophysial joints of the entire vertebral column with eventual bone ankylosis and calcification of the surrounding ligaments is not the picture of *Br. abortus* infection.

The initial response to streptomycin appeared encouraging. However, it must be remembered that the patient had a similar episode of chills and fever ten months previously and had no streptomycin. The temperature chart was almost identical. That is, the temperature dropped to normal in a period of approximately three days. In spite of this, it must be emphasized that four days' medication with streptomycin in a person who has had *Br. abortus* infection over such a long period of time is not a fair clinical trial. The reason for stopping the streptomycin in this case was the severe local inflammation in the buttocks produced by the injections. The patient refused to take any more streptomycin. On Feb. 9, 1947 he again began to have a low grade fever (100 to 101 F.) in the afternoon, indicating that the disease was still active. It should be emphasized that the patient felt symptom free while at complete bed rest and at no other time. Dr. E. T. Wentworth, consulting orthopedic surgeon of the Rochester General Hospital, was called into consultation as to whether or not fusion of the sacroiliac joints, fixation of the joint by some mechanical belt or incision and drainage was in order. He supplied a sacroiliac belt and suggested continued complete bed rest. This treatment would seem to be the most efficacious. His objection to fusion was that (a) the joint would fuse spontaneously and (b) the incision might accidentally enter the bone abscess and a chronic drainage sinus result.

SUMMARY AND CONCLUSION

Br. abortus infection can cause sacroiliac arthritis. The initial process is one of destruction of the joints, causing a local abscess and healing by ankylosis of the joint. Sacroiliac arthritis due to brucellosis should be considered in studying early cases of so-called rheumatoid spondylitis in which the pathologic changes observed roentgenographically are centered in the sacroiliac joints. *Brucella abortus* is not a factor in the cause of rheumatoid spondylitis. The treatment of choice in sacroiliac arthritis due to brucellosis is bed rest and a diet high in calories and in vitamins. This conclusion is drawn from the cases of spondylitis reported in the literature and this reported case of sacroiliac arthritis. No conclusive evidence is offered that streptomycin is of value in the treatment of sacroiliac arthritis due to brucellosis. However, it must be admitted that streptomycin was used for an insufficient period of time in the treatment in this case. It is suggested that streptomycin in an equally divided dose of 4 Gm. daily should be used over a long period of time in a manner similar to that in which penicillin is employed in the treatment of subacute bacterial endocarditis. Streptomycin is a much more toxic drug than penicillin. The suggestion that it be used over a longer period of time should be taken with a great deal of caution. Recent studies⁸ suggest that administration of streptomycin and sulfadiazine is the treatment of choice.

COHESIVE BANDAGE FOR CLUBFOOT IN NEWBORN INFANTS

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Chicago

The earlier clubfoot (*talipes equinovarus*) is treated, the better. This has been known for years, but it was impossible to treat newborn infants because of technical difficulties. Orthopedic treatment was delayed until the baby was 3 months old, when correction could be held by means of a plaster of paris cast. A technic that makes immediate treatment possible is desirable. Repeated

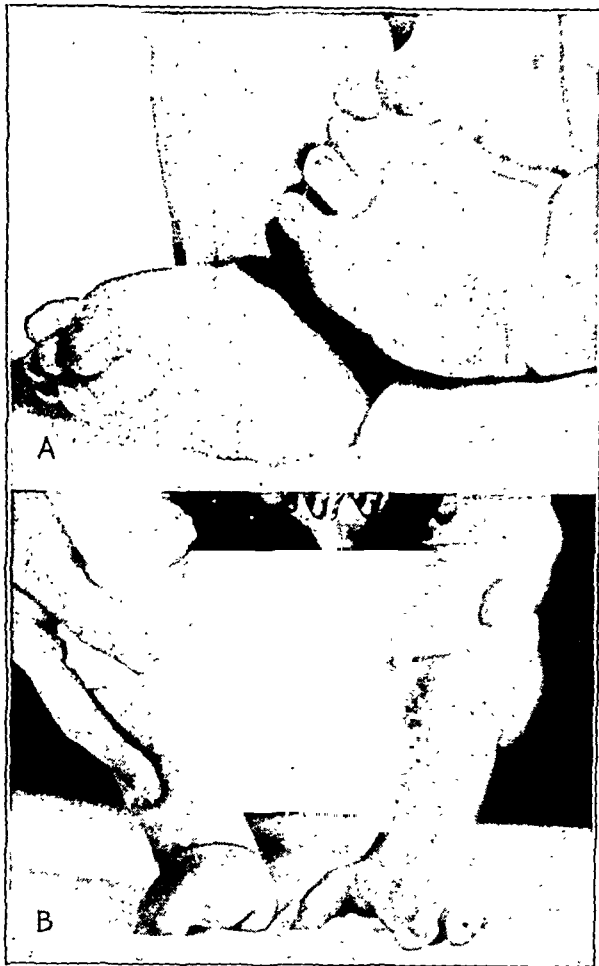


Fig. 1.—Deformities associated with *talipes equinovarus* of the left foot. A, congenital pes valgoplanus of the right foot, with anomalies of toes. B, congenital anomalies of fingers (same patient).

manipulation by the parents is not dependable, and repeated manipulation by the physician cannot be carried out frequently enough to be of much value. Manipulation in itself is not sufficient in any case; there must be retention of the correction that is obtained. The size of the foot has made this a problem. The plaster technic is extremely difficult and is generally considered impossible until the infant is 3 months old. Another disadvantage of the cast is that it interferes with development of the foot and leg, resulting in muscle atrophy. Retention of correction by means of adhesive tape is impractical, since the tape irritates the skin. By means of splints, such as the Denis-Browne splint, treatment

8. Keefer, C.: Personal communication to the author.

can be started when the infant is from 1 to 3 months old, and excellent results are claimed for this method of treatment.

With the introduction of the cohesive bandage technic, treatment is possible immediately after birth. The bandage will stick to itself but will not adhere to the

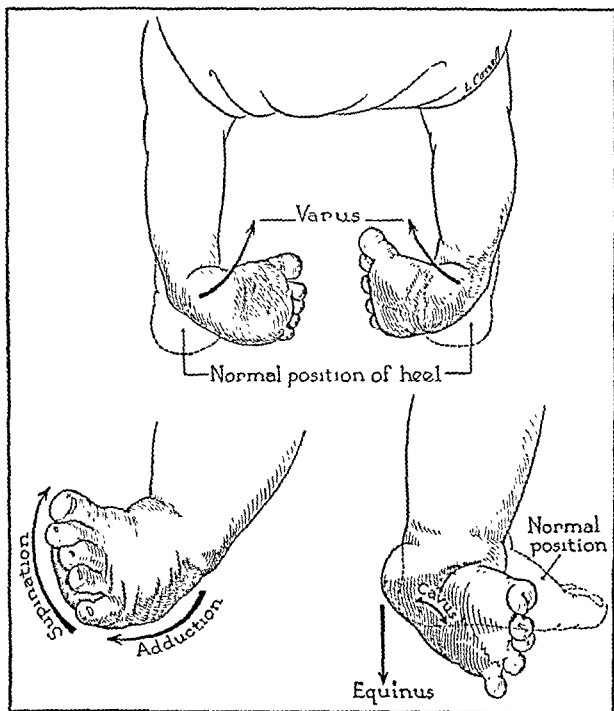


Fig. 2—Components of a clubfoot deformity.

skin, so that it cannot irritate the skin. It permits early correction of each part of the deformity.

The younger the child, the more rapid is the rate of growth. For this reason, the earlier the correction is started, the more the growth factor will be utilized in obtaining correction. At the same time, the structures are softer and the foot is more malleable and more responsive to treatment.

It is generally believed that the deformity occurs as a result of retention of a developmental position in utero. If the normal development is arrested early, the anatomic changes will be severer than if the unfolding process is interfered with in the latter part of uterine life. There is also a true anomalous type of congenital clubfoot, which is often associated with other deformities, such as malformation of the hand or congenital dislocation of the hip (fig. 1). In both types of deformity, the heel is in the varus position, the anterior part of the foot is adducted and supinated and the foot is plantar-flexed in the equinus position. A foot in this position has a cavus deformity (fig. 2). Associated with these structural changes is an imbalance between the power of the muscle groups; the inverters are stronger than the everters.

To obtain a normal foot it is therefore necessary to correct the deformity and to establish normal balance between the muscles. To obtain normal muscle balance the foot must be brought into the opposite direction and used in this position until the everters have normal power. Correction is never complete, no matter how well the foot looks, until the foot can voluntarily be brought into eversion. The term "eversion" as used here means bringing the foot into pronation and abduc-

tion and the heel into the valgus position, and the term "inversion" means a combination of supination and adduction with the heel in the varus position.¹ In every case the foot must be brought into overcorrection. This is essential. Furthermore, the overcorrection should be obtained before weight bearing is started, since weight bearing with overcorrection will tend to correct the foot further, while weight bearing with any deformity present will tend to increase the deformity. For this reason, the earliest possible correction of the deformity and retention of the overcorrected position are most advantageous.

The key to the correction of the clubfoot deformity is full correction of the varus deformity. The varus deformity of the heel is the most difficult part of clubfoot to correct, and the deformity will always recur unless true correction is obtained. The equinus deformity is the most readily corrected, but this should never be accomplished until the other components have been obviated. If the tendo achillis is lengthened first to correct the equinus deformity, the counterforce by which the varus distortion and the supination are corrected is removed and satisfactory conservative treatment is prevented.

The cohesive bandage technic consists, first, in cleansing the foot and leg for at least two minutes with 1:4,000 aqueous solution of benzalkonium chloride. Benzalkonium chloride has the advantage of cleansing the skin and reducing the bacterial count to a minimum without irritation. After the skin is dry, the foot and leg are painted with compound benzoin tincture, with a sterile applicator. When the benzoin tincture has dried, the cohesive bandage is applied. The leg is encircled just

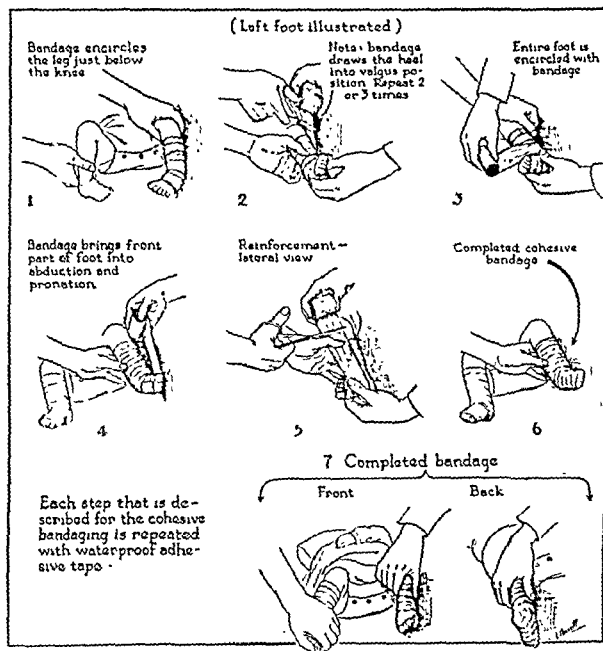


Fig. 3.—Steps in the application of the cohesive bandage.

above the bulge of the gastrocnemius muscle (fig. 3 [1]). The bandage is applied flat, with no wrinkles, and to accomplish this it is held at its full width while being wrapped. A second bandage is applied in the same manner as the first, overlapping the first by half. This is done by the physician, with an assisting nurse

1. Hauser, E. D. W.: *Diseases of the Foot*, Philadelphia, W. B. Saunders Company, 1939.

holding the leg and cutting the bandage with a 6 inch (15 cm.) bandage scissors. This encircling bandage serves as an anchor for the bandage which is to be used for correction of the varus deformity of the heel, since the cohesive bandage will stick to itself but not to the skin.

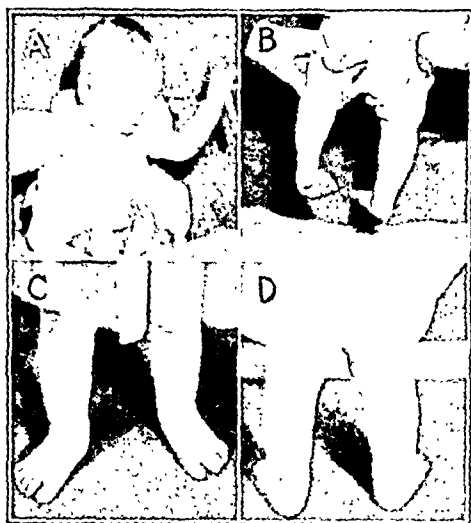


Fig. 4.—Results of treatment with cohesive bandage. *A*, and *B*, bilateral clubfoot in a patient aged 7 months. *C* and *D*, appearance of the feet after treatment (age 1½ years).

To correct this deformity of the heel, the cohesive bandage is now started from the encircling anchor bands, on the medial side of the leg. The physician brings the anterior part of the foot into abduction, pronation and dorsiflexion, thus forcing the heel into the maximum amount of valgus position that can be obtained. Then the bandage is brought along the medial side of the leg, ankle and foot, around under the heel and up the lateral side of the leg, to be attached to the encircling bands on the lateral side. This stirrup type of bandaging is repeated, overlapping the previous strip by half, and the heel always brought into the valgus position (fig. 3 [2]). Then an encircling bandage is again applied, overlapping by half, down to the ankle (fig. 3 [3]).

Next, the fore part of the foot is corrected. The anterior part of the foot is encircled twice for an anchor bandage, overlapping by half. The anterior part of the foot is then brought into pronation and abduction, and the cohesive bandage is started from the anchor on the dorsum of the foot, on the medial side. It is brought under the foot, and, with the foot pulled into abduction and pronation, the bandage is taken obliquely across the dorsum of the foot and attached to the medial side of the leg above the ankle (fig. 3 [4]). A second strip is applied, overlapping the first by half (fig. 3 [5]). These are reinforced until sufficient strength is obtained to hold the corrected position. Special care is necessary to obtain a flat bandage over the anterior part of the ankle, since the skin in this area becomes redundant with the correction and there is a tendency for creasing. The entire foot and leg are covered with the bandage. The dorsal and plantar surfaces of the toes are included, so that only the very tips of the toes are visible. The entire bandage is then molded, so that everything is smooth, and the foot and leg are thus in a soft smooth well fitted encasement (fig. 3 [6]).

In order to obtain a support that is adequate to hold the foot against the constantly contracting muscles,

it is necessary to have a much stronger bandage. This is accomplished by reinforcement with water-proof adhesive tape. A roll of 2 inch (5 cm.) adhesive tape is applied to the upper part of the leg in the same manner as that described for the cohesive bandage. The entire technic is now repeated with the adhesive tape, the foot again being brought more into the valgus position, with further abduction and pronation as the tape is applied. The entire foot and leg are encircled with sufficient layers of the adhesive tape to counteract the tendency for the foot to resume its original abnormal position (fig. 3 [7]). These cohesive and adhesive bandages are manually molded, and there is smooth and even pressure throughout the entire extremity.

The interval between changes of bandage is variable, depending on the age at which the correction is started and on the severity of the deformity, as well as the distance from which the patient is brought. Usually the newborn infant with clubfoot is seen at the hospital a day or so after birth, and treatment is started at once. The technic for a newborn infant is the same as previously described, with the advantage that, since the child can easily be seen each day at the hospital, the bandage is reinforced daily, with more correction in each treatment. This is continued for a period of a week. Correction is so rapid at this stage that the bandage becomes ill fitting and an entirely new encasement is applied at the end of a week. This is again reinforced daily, and a new bandage is applied the day the mother takes the baby home. The child is then brought to the office two weeks later, when the bandage is again renewed. The treatment is followed through at the office, and the interval is usually two to three weeks, because of the rapid change of the foot and the loosening of the bandage so that it becomes less effective.

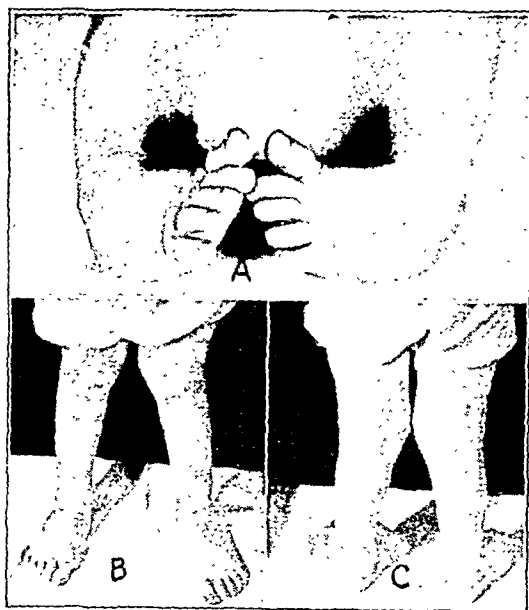


Fig. 5.—Results of treatment with cohesive bandage. *A*, severe bilateral clubfoot in a patient aged 2 months. *B* and *C*, appearance of the feet after treatment (age 2 years and 4 months).

Not only must the deformity be corrected, but any tendency to recurrence of the deformity must be prevented, and for this reason the correction is always retained until the child walks. Since the deformity is corrected so rapidly in the early stage, it is sometimes difficult to make the parents understand the need

for continuous retention of the foot in the overcorrected position until walking in the overcorrected position is assured. For this reason it is important to explain the plan of treatment to the parents at the time it is started and to emphasize the necessity for following through, because there must be overcorrection and it must be retained until walking in the overcorrected position is assured.

It is believed that the internal rotation is associated with the adduction of the foot. The early correction of the foot will influence the tibial deformity.

In some cases a tight tendo achillis will not allow full correction of the equinus deformity. Before the child walks and all other corrections are obtained, a subcutaneous tendon lengthening is done. When the child starts to walk, the outer side of the heel and sole is raised. A brace is used to hold the foot in abduction and external rotation.

A review of 70 consecutive cases showed excellent correction with treatment by means of this cohesive bandage technic (figs. 4 and 5). The advantage of early treatment was clearly established. In 6 cases the tendo achillis was lengthened; 3 patients had plantar fasciotomies, and 2 required further correction at 4 years and another at 6 years of age. In 5 the deformities must be considered congenital anomalies. With the exception of these normal results were obtained.

SUMMARY AND CONCLUSIONS

The earlier the clubfoot deformity is treated, the better. The usual type of clubfoot is due to retention of an early position in utero. This can be corrected, so that a normal foot is obtained in each case. Some cases of clubfoot have involved organic changes. Here early and persistent treatment gives the best results. Overcorrection of the position and retention of the overcorrected position until the child walks are necessary. Braces, and occasionally casts, may be needed to assure correct gait.

A new technic with cohesive bandage is described, which permits accurate and early correction of clubfoot. A summary of results in 70 patients treated during a period of six years clearly established the advantages of this type of treatment.

720 North Michigan Avenue.

Treatment of Pernicious Anemia.—The most satisfactory method of treating patients with pernicious anemia, or any type of macrocytic anemia with a megaloblastic bone marrow, is by the intramuscular injection of 1 cc. of refined liver extract, containing 15 units daily for a period of two weeks. At the end of this time I would give 1 cc. (15 units) three times weekly until the red blood cell count is at least 4,500,000 per cubic millimeter and the hemoglobin a minimum of 12 Gm. (83 per cent.) The maintenance dose, in my opinion, is 1 cc. (15 units) every two weeks, although some have stated that the blood may be maintained in a normal condition by giving such a dose once a month. There is one danger which should always be kept in mind. If an inadequate dose of liver extract is employed, the red blood cell count and hemoglobin may fall below normal limits. Although there may be only a slight reduction, nevertheless there is always the possibility that nervous manifestations may develop, or if already present they may progress, sometimes with alarming rapidity. In general, it may be said that when the blood is kept in a normal condition, the nervous changes, if present, may improve greatly, or at least that they will not progress. If they are not present before treatment is started, they will not appear during the course of adequate therapy.—Sturgis, Cyrus C., M.D., *Official Journal of the Interstate Postgraduate Medical Association—Postgraduate Medicine*, June 1948.

Clinical Notes, Suggestions and New Instruments

PARALYSIS OF LEFT VOCAL CORD FOLLOWING STREPTOMYCIN THERAPY

LAWRENCE K. GUNDRUM, M.D.
Los Angeles

The development of sensitivity to streptomycin when used over long periods of time is not uncommon. Many reports¹ of temporary and occasionally permanent injury to both the vestibular and auditory portions of the eighth nerve have been recorded on their terminals. Just why the eighth nerve has been the only one injured is unexplained. It is reasonable to suppose that other nerves might be similarly affected. However, a search of the literature failed to show injury to any other one from the use of streptomycin.

The following case is reported to show a possible effect of streptomycin sensitivity on the recurrent laryngeal nerve.

REPORT OF A CASE

Mrs. W. L., a white woman 33 years of age, was admitted to the hospital Nov. 10, 1947, with complaints of pain in the right flank centered in an area about the size of a quarter, pain being constant, but more noticeable in the recumbent position, and always accompanied with urgency and frequency of urination.

Past history showed the patient to have had no serious illnesses except an attack of arthritis five years previously. She had an unusually large appetite and drank twenty to twenty-five cups of coffee daily.

Physical examination, including observation of the ears, nose, throat, heart and lungs and neurologic examination, showed nothing abnormal except pain and tenderness in right flank, at about the level of the third lumbar vertebra. Roentgen examination showed decided ptosis of the right kidney, with resultant kinking of the ureter in the pelvic region. On November 17 a suspension of the kidney was done. From December 1 to December 8, 11 Gm. of streptomycin and 2,000,000 units of penicillin were given intramuscularly. About December 20 the patient noticed a lump in her throat; she had some difficulty in swallowing liquids. She became progressively worse, and about Jan. 1, 1948, some hoarseness developed. Examination of the ears, nose and throat on January 13 showed complete paralysis of the left vocal cord. Audiometric tests showed a loss of all tones of less than 5 decibels. Responses to tests of the vestibular apparatus were within normal limits. The reaction to an intradermal test for sensitivity to streptomycin was negative. Kolmer, Muzzini and Kahn reactions were negative. Another complete physical examination, including roentgenographic examination of the chest, failed to reveal any pathologic change. The patient was given large doses of vitamin B complex and seen at weekly intervals until February 20, with no apparent change in the laryngeal paralysis.

COMMENT

This case of laryngeal paralysis is presented as one of possible nerve injury which may be due to sensitivity to streptomycin.

1930 Wilshire Boulevard.

From the Departments of Urology and Otolaryngology of the Queen of the Angels Hospital.

1. Rake, G.; Hamre, D.; Kavanagh, F.; Koerber, W. L., and Donovick, R.: The Toxicity of Streptothricin, *Am. J. M. Sc.* **210**: 61-66 (July) 1945. Molitor, H.; Graessle, O. E.; Kina, S.; Mushell, C. W., and Silber, R. H.: Some Toxicological and Pharmacological Properties of Streptomycin, *J. Pharmacol. & Exper. Therap.* **86**: 151-173 (Feb.) 1946. Brown, H. A., and Hinshaw, H. C.: Toxic Reaction of Streptomycin on the Eighth Nerve Apparatus, *Proc. Staff Meet., Mayo Clin.* **21**: 347-352 (Sept.) 1946. Mushett, C. W., and Martland, H. S.: Toxic Effects on the Nervous System, *Arch. Path.* **43**: 625-626 (Dec.) 1946. Fowler, E. P., Jr., and Seligman, E.: Otic Complications of Streptomycin Therapy, *J. A. M. A.* **133**: 87-91 (Jan. 11) 1947. McDermott, W.: Neurologic Reactions, *Am. J. Med.* **2**: 496-499 (May) 1947. Farrington, R. F.; Hull Smith, H.; Bunn, P. A., and McDermott, W.: Neurologic Abnormalities, *J. A. M. A.* **134**: 684-688 (June 21) 1947. Hawkins, J. E., Jr., and Mushett, C. W.: Vestibular Disturbances Produced in Animals by Streptomycin, *Am. J. M. Sc.* **213**: 755 (June) 1947.

Council on Foods and Nutrition

The following report has been accepted by the Council.

JAMES R. WILSON, M.D., *Secretary.*

THE FORTIFICATION OF MILK WITH VITAMINS A AND D

For many years the Council on Foods and Nutrition has approved fortification of milk with vitamin D. The Council has stated the opinion that fortification of milk as a general purpose food with vitamin A is not in the interest of public health. However, no objection is taken to the concurrent presence of vitamin A when the preparation used for fortifying with vitamin D contains vitamin A in natural association.

The Food and Drug Administration in defining a standard of identity for evaporated milk took no exception to the concurrent presence of both vitamins A and D in fortifying agents when both vitamins are derived from natural sources.

Fish liver oil concentrates, sometimes used for fortifying milk with vitamin D, often contain relatively large amounts of vitamin A. Milk fortified with such concentrates has been accepted by the Council, and a statement of vitamin A content has been permitted on the label. However, claims concerning increased nutritive value because of the vitamin A content have not been permitted.

Before the Council can accept claims for milk fortified with vitamin A it seems desirable to have evidence that such fortification is in the interest of public health, even though the procedure is apparently harmless. Such evidence appears to be lacking. Diets that contain appropriate amounts of milk are likely to contain adequate vitamin A. The evidence now available does not warrant a change in the standing decisions of the Council on Foods and Nutrition concerning specific fortification of specific foods to include fortification of milk with vitamin A.

In its acceptance of milk fortified with preparations from natural sources that contain both vitamins A and D, the Council has assumed that the presence of vitamin A is incidental. In those instances in which the vitamin A component is adjusted to supply a specified amount, presumably the amount of vitamin A is not incidental and fortuitous. In any case, the addition of vitamin A does not constitute sufficient reason for acceptance of advertising that suggests special nutritional advantages. The addition of vitamin A to milk, already a good source of this nutrient, may add to the cost of the milk and is without apparent advantage to public health.

ACCEPTED FOODS

The following products have been accepted as conforming to the Rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Mead Johnson and Company, Evansville, Ind.

PROTENUM consists of nonfat milk solids, calcium caseinate, dextrose and cocoa.

Analysis (submitted by manufacturer).—Moisture 3%, ash 7%, fat (ether extract) 2%, protein (N $\times$ 6.25) 42%, carbohydrates other than crude fiber (by difference) 46%.

Calories.—3.7 per gram; 105 per ounce.

Vitamins.—No vitamin claims are made, but water soluble vitamins of milk are contained in the product.

Use.—A whole protein supplement for oral use when extra protein or a concentrated source of protein is required in the diet.

Mead Johnson and Company, Evansville, Ind.

LONALAC consists of lactose, milk fat, casein, calcium phosphate monobasic, potassium carbonate, potassium chloride, calcium hydroxide, calcium chloride, calcium carbonate, magnesium oxide, thiamine, nicotinic acid and riboflavin.

Analysis (submitted by manufacturer).—Carbohydrate (by difference) 38%; fat (ether extract) 28%; protein (N $\times$ 6.38) 27%; ash (including sodium 0.02% and potassium 1.4%) 5.5%, and moisture 1.5%.

Calories.—Per gram, 5; per ounce, 145.

Vitamins.—No specific claims for vitamin content are made, and vitamins which are added are designed merely to replace that quantity of vitamins normally present in milk.

Use.—For use in diets of restricted sodium content.

Council on Physical Medicine

The Council on Physical Medicine and the American National Red Cross have adopted the following statement.

HOWARD A. CARTER, *Secretary,*
Council on Physical Medicine.

CARL J. POTTHOFF, M.D.,
The American National Red Cross.

RESUSCITATION

Joint Statement Issued by the Council on Physical Medicine and the American National Red Cross

THE MANUAL PRONE PRESSURE METHOD RECOMMENDED FOR USE BY NONMEDICAL PERSONS

There are many ways of giving artificial respiration. But in asphyxia it is vitally important that artificial respiration be started without a moment's delay. Most victims of asphyxia will die if delay occurs in providing resuscitation while apparatus is being brought to the scene or medical help is being obtained. Accordingly, the general public should be taught a method for giving artificial respiration that can be administered without apparatus of any kind.

Many manual methods of giving artificial respiration have been proposed. The American Red Cross and other organizations have taught the prone pressure method. This method has several important advantages: 1. It requires no apparatus of any kind and therefore can be started immediately. 2. It is easy to administer properly and has been proved effective in countless cases of asphyxia. 3. The victim lies prone; thus there is little danger of occlusion of the respiratory passage by the tongue. The Council on Physical Medicine of the American Medical Association advises that the Red Cross continue to teach the prone pressure method.

INHALATORS AND RESUSCITATORS

An inhalator is an apparatus that delivers to the victim gas, usually oxygen, under low, continuously positive pressure. The resuscitator delivers the gas under either alternating positive pressure or alternating positive and negative pressure. Many apparatus now available can be adjusted to act either as inhalators or resuscitators.

The Council on Physical Medicine recommends that the gas administered by resuscitator or inhalator to asphyxiated victims be oxygen rather than a mixture of oxygen and carbon dioxide.

When the face mask of a resuscitator is in place and the apparatus functions, simultaneous manual artificial respiration is not necessary because the alternate blow or the alternate blow and suck action of the resuscitator ventilates the victim's lungs.

If an inhalator is used on a victim and he is not breathing, simultaneous manual artificial respiration is necessary. If a victim needing oxygen is breathing, the inhalator adjustment should be used; then manual artificial respiration is not necessary.

In earlier years medical workers looked with disfavor on blow and suck machines. The best resuscitators have now been improved to such extent that if properly used they do not damage the lungs and do in some cases secure better ventilation of the lungs than manual artificial respiration does.

SELECTION OF A RESUSCITATOR

It is important that a resuscitator of reliable type be used, and that it be checked at times to assure its proper adjustment. If the positive or negative pressures increase or decrease appreciably, insufficient ventilation of or damage to the victim's lungs may occur. It is highly important that people who operate the resuscitator be adequately trained concerning when and how to use the apparatus.

Any manufacturer of resuscitators may submit his product together with his advertising and directions for use to the Council on Physical Medicine of the American Medical Association for study and acceptance. The Council gives its seal of acceptance if the apparatus is reliable, effective for the uses intended, and free from unnecessary danger, and if the directions are adequate and the advertising ethical. Any organization wishing to purchase a resuscitator can obtain a list of Council-accepted resus-

citators by writing the Secretary, Council on Physical Medicine, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

THE ROLE OF THE RED CROSS

The Red Cross will continue to teach the manual prone pressure method for administering artificial respiration. It will emphasize to the public that, although at times a resuscitator has value, it is vitally important to start manual artificial respiration immediately and to continue efforts until a resuscitator has actually commenced ventilation of the lungs. If newspaper, magazine and radio articles bring the resuscitator to general public attention, there is great danger that the public will procrastinate in giving manual artificial respiration while awaiting a resuscitator. Therefore, the Red Cross and all publicists should stress the need for manual artificial respiration, and in stories of rescues where both methods are used they should stress the value gained from the manual efforts.

The Red Cross will not guide the selection of resuscitators and inhalators by local rescue squads or teach when and how to operate them. Such advice should come from the Council on Physical Medicine and from local medical committees authorized by the local medical society to act as advisors to rescue squads. Any inquiries to the Red Cross for such information and teaching should be referred by Red Cross officials to the Council and to the Advisory Medical Committee on Rescue Squads of the local medical society.

In the opinion of the Council, operators should possess detailed knowledge of the mechanical construction of resuscitators and inhalators and should have some knowledge of the physiology of respiration. If the apparatus are to be used intelligently the officials of the community should consult the local medical society and request the name of a physician who will assume the responsibility to instruct the operators. It is important to have a responsible person to make periodic inspection of the equipment and to assist in teaching other instructors.

IMPORTANT POINTS TO BEAR IN MIND

1. A nonbreathing person should be given artificial respiration immediately by the most convenient method at hand, which in the great majority of cases is the prone pressure method. Sometimes a few seconds or longer elapse before the victim can be brought into a proper position. If so, the lower part of his chest should be rhythmically compressed and released while he is being brought into position.

2. The air passages must be free from obstruction. The tongue sometimes presses back into the pharynx, shutting off the airway. The first aider should insert two fingers far back into the mouth and press downward and forward on the tongue. Thus the tongue is brought into proper position. If the victim lies prone, the tongue will then remain in this position. If the victim is not prone, it may be necessary to have an assistant hold the tongue in good position with a handkerchief. Fluid or vomitus may also obstruct the passageway somewhat. If the victim is prone, such fluid usually flows out quickly while artificial respiration is given. However, it may be advisable to wipe out the mouth, reaching far back with a handkerchief.

These measures of bringing the tongue forward and of removing other obstruction should be accomplished at once. If only one first aider is present, he should execute these measures between compressions, starting after the first one.

3. If an accepted resuscitator is at hand, it may be substituted for manual artificial respiration with assurance that sufficient ventilation will occur. Manual artificial respiration, however, is all-important while the rescuer awaits a resuscitator. Use of the manual method should continue while the resuscitator is being adjusted, so that the victim's lungs constantly receive air.

4. If a person has not been breathing for five to ten minutes, the chance of survival is slight, even if the most efficient inhalators or resuscitators are used. Nevertheless, an attempt at resuscitation should be made when the slightest chance for recovery exists. Artificial respiration should never be stopped when a pulse or heart beat can be felt. Recovery of normal breathing may be long delayed, especially in cases of electric shock. Most patients recover within about one-half hour, but some have been resuscitated after several hours of artificial respiration.

REPORT OF THE COUNCIL

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, Secretary.

ARMSTRONG X-4 BABY INCUBATOR, MODEL 500 ACCEPTABLE

Manufacturer: The Gordon Armstrong Company, Inc., Bulkeley Building, 1501 Euclid Avenue, Cleveland 15.

The Armstrong X-4 Baby Incubator, Model 500, is a device for housing newborn infants under conditions of controlled temperature, humidity and oxygen concentration.

It consists of a steel-constructed crib provided with a three-ply safety glass lid that gives full length view of the occupant.

It is provided with connections for the inflowing oxygen and with a cable for the current needed to operate the heater. The apparatus operates on alternating current only, but functions on 110, 150 or 220 volt lines by simply changing the two lamps. It draws 156 watts. The firm informed the Council that the apparatus is tested and approved by Underwriters' Laboratories for use with oxygen. The thermometer is graduated in both the Fahrenheit and the Centigrade scales. The crib is mounted on a four-legged stand bearing casters, and is 104 cm. (41 inches) high. The width and length of the crib are 40 and 81 cm. (15¾ and 32 in.) respectively. The whole weighs 30 Kg. (65 pounds); the shipping weight is 44 Kg. (98 pounds).



Armstrong X-4 Baby Incubator, Model 500

When tested under clinical conditions, the apparatus was reported by an investigator for the Council to be well constructed, safe, compact and easy to operate.

The Council on Physical Medicine voted to include the Armstrong X-4 Baby Incubator, Model 500, in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

ASCORBIC ACID (See New and Nonofficial Remedies, 1947, p. 517.

The following dosage form has been accepted:

WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Tablets Ascorbic Acid: 25 mg., 50 mg. and 100 mg.

ESTROGENIC SUBSTANCES (WATER SOLUBLE) (See New and Nonofficial Remedies, 1947, p. 346).

The following dosage form has been accepted:

WYETH, INC., PHILADELPHIA

Tablets Conestron: 1.25 mg. and 0.625 mg.

U. S. Trademark Pending.

DIGITOXIN (See New and Nonofficial Remedies, 1947, p. 248).

The following dosage form has been accepted:

R. J. STRASBURGH CO., ROCHESTER, N. Y.

Tablets Digitoxin: 0.1 mg. and 0.2 mg.

DIIDO-OXYQUINOLINE (See New and Nonofficial Remedies, 1947, p. 191).

The following additional dosage form has been accepted:

B. L. LEMKE & Co., NEW YORK, N. Y.

Tablets Yodoxin: 210 mg.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FORTY-EIGHTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., and Anne Tipner

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Introduction

This report is the forty-eighth annual compilation of information and statistics on medical education in the United States and Canada by the Council on Medical Education and Hospitals of the American Medical Association.

In addition to the presentation of the customary statistics concerning medical schools, students and graduates, several subjects of current interest are discussed. These include the deferment of medical and premedical students under the Selective Service Act, the financial support of medical schools, the forthcoming survey of medical education, clinical clerkships, the relative interest of medical students in general practice and the practice of a specialty, the objectives of premedical education and the factors which limit enrolments in existing medical schools. There is also presented a summary of the postgraduate and continuation courses that were offered in the United States during the past year.

In previous years the lists of hospitals approved for internships, residencies and fellowships were included in the Educational Number. This year these lists were published in the May 1, 1948 issue of THE JOURNAL. It was felt that the publication of a special Internship and Residency Number in the spring would provide information concerning approved hospitals at the time when it would be most helpful to those seeking appointments for the following year. Hospitals that have been approved for internship or residency training since the publication of the Internship and Residency Number are listed in this issue.

A number of examining boards in the medical specialties have revised their requirements since the 1947 Educational Number was published. A detailed summary of the requirements of the various American boards is therefore presented again this year.

The data published in the Educational Number are obtained from official reports. The Council and THE

JOURNAL express their gratitude and appreciation to the officers of the medical schools, hospitals and other agencies whose cordial and continuing cooperation makes possible each year the compilation and presentation of this body of fundamental information concerning medical education in the United States and Canada.

Selective Service Act of 1948

Under the Selective Service Act of 1948, all men between the ages of 19 and 25 are liable for registration. Certain persons are exempt from service by reason of having served in one of the armed forces for stipulated periods during World War II. The law is rather liberal in its provisions for the deferment of persons who are necessary to the maintenance of the national health, safety or interest, provided that such deferment is based on the individual's status.

The National Headquarters of the Selective Service System has conferred with representatives of the medical schools and has attempted to arrive at a policy whereby a certain number of students in premedical and medical courses will be given consideration for deferment. These policies have not yet been announced. It is expected that they will be published shortly in a directive for the Selective Service System, although they may not be forthcoming until the local boards are completely established. It would appear that as far as medical students who already enrolled are concerned, there need be little concern relative to their deferment so long as they maintain a satisfactory standing in the respective medical schools.

The difficult problem arises with the premedical students. This gave much trouble during World War II and remains the problem of today. There are many colleges and universities in the United States that give premedical training. In these colleges are many men who at some time in their college career arrive at a decision to study medicine, following which they enroll in certain courses and become premedical students.

With the limited number of men between the ages of 19 and 25 who are liable for service, it is obvious that the deferment of all would-be premedical students will be impossible.

It is believed that a policy will be worked out whereby the responsibility for advising the local boards as to the identity of premedical students will be placed on the deans of the medical colleges of the United States. The deans will be required to accept tentatively for admission at a later date into the medical colleges premedical students who have attained their nineteenth birthday and who have had one year in college. The deans will be permitted to forward to the local boards sufficient certificates of tentative acceptance to insure the proper number of students in each freshman class. The number of certificates permitted a school will include a reasonable allowance for attrition. Acceptance by the medical

Medical School Calendars

This 1948 Educational Number presents data for the 1947-1948 academic year. During this year most schools followed conventional schedules with classes beginning in September or October and ending in May or June. The calendars of the schools that present irregular schedules are summarized in table 1.

Only one school, Mississippi, admitted more than one freshman class during this period. The freshman year in all schools except Utah began in either September or October. Utah admitted its freshman class in June. The second freshman class at Mississippi began in February. Tennessee admitted students quarterly.

Three schools in the United States, Louisville, Minnesota and Marquette, whose calendars remained somewhat irregular as a result of the wartime accelerated

TABLE 1.—Admission and Graduation Calendars of Medical Schools with Irregular Schedules

	Dates of Freshman Classes Included in This Educational Number	Dates of Next Two Entering Classes		Dates of Graduating Classes Included in This Educational Number	Dates of Next Two Graduating Classes	
		1948	1949		1949	1950
Medical College of Alabama.....	.....	.....	.....	None	6-7	Unannounced
University of Georgia School of Medicine.....	.....	.....	.....	3-22	6-20	June
Northwestern University Medical School (Illinois).....	.....	.....	.....	Quarterly	Quarterly	Quarterly
Stitch School of Med. of Loyola University.....	.....	.....	.....	3-29	6-8	June
University of Chicago, The School of Medicine.....	.....	.....	.....	Quarterly	Quarterly	Quarterly
State University of Iowa College of Medicine.....	.....	.....	.....	3-13	6-10	6-9
University of Louisville (Kentucky).....	.....	.....	.....	{ 9-20-47	6-14	June
				{ 6-15-48		
				{ 8-20-47	6-11	June
				{ 6- 6-48		
University of Minnesota Medical School.....	.....	.....	.....	.....	.....	.....
University of Mississippi School of Medicine*.....	{ 9-15-47	9-20	1-31	.....	.....	.....
	{ 2- 2-48			.....	6-6	June
University of Nebraska College of Medicine.....	.....	.....	.....	3-20	6-15	June
Cornell University Medical College (New York).....	.....	.....	.....	3-26	6-18	6-17
University of Rochester School of Medicine.....	.....	.....	.....	3-27	6-18	6-10
Bowman Gray School of Medicine (North Carolina).....	.....	.....	.....	12-14-47	12-18-48	6-10
University of Cincinnati (Ohio).....	.....	.....	.....	2-7	6-4	June
Ohio State University College of Medicine.....	.....	.....	.....	3-10	12-17-48	6-10-49
Hahnemann Medical College (Pennsylvania).....	.....	.....	.....	3-18	6-16	6-15
University of Pennsylvania School of Medicine.....	.....	.....	.....	3-6	6-15	June
University of Pittsburgh School of Medicine.....	.....	.....	.....	4-9	6-8	6-7
University of Tennessee College of Medicine.....	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
University of Texas School of Medicine.....	.....	.....	.....	2-13	6-11	6-10
University of Utah School of Medicine.....	6-16-17	6-14	June	8-24-47	Aug. 1948	June 1949
				{ 7-31-47	6-12	6-10
				{ 6-12-48		
Marquette University School of Medicine (Wisconsin).....	.....	.....	.....	5-19†	April 8	April 7
University of Alberta Faculty of Medicine (Canada).....	.....	.....	.....	None	June	June
Queen's University Faculty of Medicine.....	.....	.....	.....	.....	.....	.....

* School of the Basic Medical Sciences.

† Two classes graduated because of discontinuation of internship requirement for graduation.

college will not be final until the student has finished his premedical course in a manner satisfactory to the medical college. Once a medical school has tentatively accepted a student, it will be expected that the dean will keep himself informed of the student's academic standing in college over the remaining period of his premedical study, which may extend for one to three years, and that he will keep the student's local selective service board advised of his status.

The National Headquarters of the Selective Service System has made it clear that the responsibility for deferment rests by act of Congress on the local boards. Any certificate which a dean may issue and forward to a local board, through National Headquarters of Selective Service, will be a certificate of identity and will set forth the fact that the student is pursuing satisfactorily a premedical or medical course. Should the student fail to continue his course satisfactorily, the dean will be expected to issue a notice of immediate cancellation of the certificate to the local board to whom it is forwarded. Under those circumstances, the failing student would become promptly subject to classification in a class available for military service.

program, graduated two classes during the period covered by the report. In Canada, the University of Alberta discontinued the requirement of an internship for graduation. As a result of this change, Alberta graduated two classes in June 1948, one class on the completion of a year of internship training and the other class on completion of the four year medical school course.

Northwestern, University of Chicago, and Tennessee graduated students quarterly. Alabama and Queen's, which completed conversion from the accelerated program during the past year, had no graduating classes. In addition to the three schools with quarterly graduations and the three schools that graduated two classes, thirteen other medical schools in the United States, as shown in table 1, held graduations earlier than May or June.

The next graduation is scheduled by all but six schools for either May or June 1949. Northwestern, the University of Chicago and Tennessee will graduate students quarterly. Utah, which continues on an accelerated program although admitting only one freshman class a year, will graduate a class in August 1948 and another

in June 1949. Bowman Gray, which is just completing deceleration, will graduate a class in December 1948 but none after that date until June 1950. Ohio State, which has continued to have one class on an accelerated program, will graduate that class in December 1948. It will graduate another class on the conventional schedule in June 1949.

The medical schools of the United States estimate that they will graduate a total of 5,157 students during the year July 1, 1948 to June 30, 1949. This class will probably be the smallest graduating class in several years. Its small size reflects the fact that when the class was admitted during 1945-1946, it was the smallest freshman class since 1940. This class was selected during the last year of the war, when there was no provision for the deferment of premedical students by Selective Service. During that period medical schools were unable to find a sufficient number of qualified students to fill the available places in their freshman classes. The decline in the number of graduates in 1948-1949 will be a temporary one. On the basis of present enrolments, it may be predicted that the graduating class in 1949-1950 will be larger than the one in 1948-1949.

Approved Medical Schools

The seventy medical schools in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association are shown in table 2; the nine Canadian schools in table 3, and the eight approved schools of the basic medical sciences in the United States and Canada in table 4. There have been no changes in these lists since the 1947 Educational Number.

The Hahnemann Medical College in Philadelphia is on probation, as are also the basic science schools of North Dakota and South Dakota.

On April 15, 1948, the Loyola University School of Medicine officially changed its name to the Stritch School of Medicine of Loyola University. The change of name was not accompanied by any change in the organization of the medical school itself or in the relationship of the school to Loyola University.

Tables 2, 3 and 4 list the quantitative premedical requirements effective next year for each school, the enrolment by classes for the academic year 1947-1948 and the total attendance exclusive of students in the required intern year. The number of graduates from July 1, 1947, to June 30, 1948, is also given for each school.

For the Canadian schools enrolments are also given for premedical students in the medical school as well as for students in a fifth medical year and the required intern year.

The name of the dean or executive officer is given for each school. Changes have been made in the executive officers of nine of the eighty-seven medical and basic science schools in the United States and Canada since the publication of the 1947 Educational Number. The following schools have appointed new executive officers: Arkansas, Iowa, Kansas, Creighton, Oklahoma, Pennsylvania, Marquette, Missouri and North Dakota.

Graduates

The last columns of tables 2 and 3 give the number of graduates from each medical school in the United States and Canada respectively from July 1, 1947 to June 30, 1948. During this period there were 5,543 graduates in the United States and 632 in Canada. As already mentioned, three schools in the United States graduated

two classes during this period and one school, Alabama, had no graduating class. In Canada, Alberta graduated two classes, while Queen's had no graduates as a result of deceleration.

The total students and graduates in the United States per academic year since 1905 are reported in table 5. The 5,543 graduates reported for this year are the third largest number reported for any single academic year since 1910. The record 6,389 graduates reported for 1946-1947 included the students graduated during a thirteen month period in which ten schools graduated two classes.

During 1947-1948 no school had as many as 150 graduates. The schools with the largest number of graduates in a single class were Jefferson 148, Illinois 147, Northwestern 143 and Harvard 140. Seven schools graduated fewer than 50 students in one class: Woman's Medical 35, Utah 36, Albany 40, Vermont 40, Syracuse 41, Bowman Gray 48 and Emory 48.

In Canada the most graduates were at Toronto, 129, and the fewest at Alberta, 32, and Dalhousie, 34.

Of the total of 6,175 graduates in the United States and Canada during 1947-1948, 52.1 per cent possessed a baccalaureate degree. The number and percentage of graduates with a baccalaureate degree from each medical school are shown in table 6.

Enrolments 1947-1948

The enrolment figures for the academic year 1947-1948 for the individual schools are given in tables 2, 3 and 4. The total enrolments of classes in the medical and basic science schools in the United States and Canada are recapitulated in table 7. The total enrolment, excluding students taking a required intern year, in the seventy medical and seven basic science schools in the United States was 22,739. This enrolment is 30 less than the enrolment in the regular classes for 1946-1947, although it is 1,161 less than the total enrolment for that year if the extra classes that were in session as carryovers from the accelerated program are included. The enrolment of 22,739 students during 1947-1948, while below the peak enrolments reached during the period when the accelerated program was in force, is 1,212 greater than the average enrolment during the five year period, 1937-1941, immediately preceding the war. In evaluating the enrolments for 1947-1948 consideration must be given to the fact the junior class in 1947-1948 entered medical school during the academic year 1945-1946 as the smallest freshman class in the last seven years. As pointed out earlier in this report, at the time this class was selected, there was no provision for the deferment of premedical students by Selective Service. Medical schools in that year were unable to fill the available places in the freshman class with qualified students. Had this class been at full strength when admitted, the enrolment in the medical schools would now exceed 23,000.

The medical schools of the United States are at present admitting the maximum number of students that their facilities will permit without producing crowding and a resulting lowering of educational standards. Actually a number of schools are accepting more students than they can satisfactorily accommodate.

The medical schools have analyzed the problem that confronts them with respect to increasing their enrolments as follows: Thirty-seven schools state that they could not accept more students unless their facilities for instruction in both the preclinical and clinical departments could be expanded. Of the remaining

TABLE 2.—Approved Medical Schools in the United States

Students by Classes, 1947-48							Graduates July 1, 1947 to June 30, 1948	Executive Officer	
Name and Location of School	1949 Pre-medical Requirement by Years	Fresh-Sopho- man more			Required Intern Year				Totals#
		Junior	Senior	Year	Year				
1 Medical College of Alabama, Birmingham.....	3	32	45	32	0	..	132	Roy R. Kracke, M.D., Dean.....	1
2 University of Arkansas School of Medicine, Little Rock.....	3	91	74	54	55	..	274	Joseph T. Roberts, M.D., Dean.....	2
3 University of California Medical School, Berkeley-San Francisco.....	3	72	72	71	68	..	283	Francis Scott Smyth, M.D., Dean.....	3
4 College of Medical Evangelists, Loma Linda-Los Angeles.....	3	79	81	74	85	88	319	Harold Shryock, M.D., Dean, Loma Linda; W. F. Norwood, Ph.D., Dean, Los Angeles.....	4
5 University of Southern California School of Medicine, Los Angeles.....	3	67	63	61	60	58	251	Burrell O. Raulston, M.D., Dean.....	5
6 Stanford University School of Medicine, Stanford University-San Francisco.....	3	63	59	60	60	57	242	Loren R. Chandler, M.D., Dean, San Francisco.....	6
7 University of Colorado School of Medicine, Denver.....	90 sem. hrs.	60	62	59	52	..	233	Ward Darley, M.D., Dean.....	7
8 Yale University School of Medicine, New Haven.....	3	60	55	49	58	..	222	C. N. Hugh Long, M.D., Dean.....	8
9 Georgetown University School of Medicine, Washington.....	Degree 4	120	92	79	78	..	369	Paul A. McNally, S.J., Ph.D., Dean.....	9
10 George Washington University School of Medicine, Washington.....	3	88	77	70	80	..	315	Walter A. Bloodorn, M.D., Dean.....	10
11 Howard University College of Medicine, Washington.....	2	75	65	68	66	..	274	Joseph L. Johnson, M.D., Dean.....	11
12 University of Georgia School of Medicine, Augusta.....	3	77	79	68	66	..	290	G. Lombard Kelly, M.D., Dean.....	12
13 Emory University School of Medicine, Emory University.....	3	65	59	58	48	..	210	R. Hugh Wood, M.D., Dean.....	13
14 Northwestern University Medical School, Chicago.....	85 sem. hrs.	127	124	126	123	143	520	J. Roscoe Miller, M.D., Dean.....	14
15 Stritch School of Medicine of Loyola University, Chicago.....	90 sem. hrs.	88	67	55	67	..	277	James J. Smith, M.D., Dean.....	15
16 University of Chicago, The School of Medicine.....	3	64	61	56	51	..	232	A. C. Bachmeyer, M.D., Assoc. Dean, Biology Div.; F. J. Mullin, Ph.D., Dean of Students.....	16
17 University of Illinois College of Medicine, Chicago.....	3	167	156	163	148	..	634	John B. Youmans, M.D., Dean.....	17
18 Indiana University School of Medicine, Bloomington-Indianapolis.....	3	130	101	80	85	..	396	John D. VanNuy, M.D., Dean, Indianapolis.....	18
19 State University of Iowa College of Medicine, Iowa City.....	3	80	70	61	57	..	278	Mayo H. Soley, M.D., Dean.....	19
20 University of Kansas School of Medicine, Lawrence-Kansas City.....	3	84	85	83	56	..	308	Franklin D. Murphy, M.D., Dean, Kansas City.....	20
21 University of Louisville School of Medicine, Louisville.....	2	96	83	86	00	..	325	John Walker Moore, M.D., Dean.....	21
22 Louisiana State University School of Medicine, New Orleans.....	90 sem. hrs.	100	71	57	80	..	308	Vernon W. Lippard, M.D., Dean.....	22
23 Tulane University of Louisiana School of Medicine, New Orleans.....	3	143	120	115	99	..	477	Maxwell E. Lapham, M.D., Dean.....	23
24 Johns Hopkins University School of Medicine, Baltimore.....	Degree 3	73	73	72	79	..	297	Alan M. Chesney, M.D., Dean.....	24
25 University of Maryland School of Medicine and College of Phys. and Surg., Baltimore.....	3	96	79	69	78	..	322	H. Boyd Wylie, M.D., Dean.....	25
26 Boston University School of Medicine, Boston.....	3	70	56	54	55	..	235	James M. Faulkner, M.D., Dean.....	26
27 Harvard Medical School, Boston.....	3	111	109	144	149	..	504	C. Sidney Burwell, M.D., Dean.....	27
28 Tufts College Medical School, Boston.....	4 and degree	112	98	89	98	..	394	Dwight O'Hara, M.D., Dean.....	28
29 University of Michigan Medical School, Ann Arbor.....	3	130	105	109	132	..	476	Albert C. Furstenberg, M.D., Dean.....	29
30 Wayne University College of Medicine, Detroit.....	3	68	60	57	61	..	246	Hardy A. Kemp, M.D., Dean.....	30
31 University of Minnesota Medical School, Minneapolis.....	3	123	101	92	75	101	391	Harold S. Diehl, M.D., Dean.....	31
32 St. Louis University School of Medicine, St. Louis.....	3	115	106	91	120	..	432	Abhousse M. Schwitalba, S.J., Ph.D., Dean.....	32
33 Washington University School of Medicine, St. Louis.....	3	86	82	101	91	..	360	Robert A. Moore, M.D., Dean.....	33

34	Creighton University School of Medicine, Omaha.....	3	75	62	12	65	24	65	Perry J. Carroll, M.D., Dean.....	34
35	University of Nebraska College of Medicine, Omaha.....	3	49	73	29	67	26	67	Harold G. Luth, M.D., Dean.....	35
36	NEW YORK									
36	Albany Medical College, Albany.....	3	45	51	12	11	182	10	R. S. Cunningham, M.D., Dean.....	36
37	Long Island College of Medicine, Brooklyn.....	3	113	98	101	91	101	92	Dean A. Curran, M.D., President; Bureau W. Clark, M.D., Dean.....	37
38	University of Buffalo School of Medicine, Buffalo.....	3	71	71	56	53	273	74	Stockton Kimball, M.D., Dean.....	38
39	Columbia University College of Physicians and Surgeons, New York.....	3	111	106	110	102	172	104	Wilfred C. Raybould, M.D., Dean.....	39
40	Cornell University Medical College, New York.....	3	85	79	73	78	313	78	Joseph C. Hinely, Ph.D., Dean.....	40
41	New York Medical College, Flower and Fifth Avenue Hospitals, New York.....	3	124	107	96	119	166	110	J. A. W. Hetrick, M.D., President and Dean.....	41
42	New York University College of Medicine, New York.....	3	127	113	113	132	152	132	Carroll McEwen, M.D., Dean.....	42
43	University of Rochester School of Medicine and Dentistry, Rochester.....	3	68	65	68	66	267	66	George H. Whipple, M.D., Dean.....	43
44	Syracuse University College of Medicine, Syracuse.....	3	56	46	46	42	169	11	H. G. Wel-kotten, M.D., Dean.....	44
45	NORTH CAROLINA									
45	Duke University School of Medicine, Durham.....	3	71	69	62	64	270	66	Wilbur C. Davidson, M.D., Dean.....	45
46	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.....	3	54	11	10	19	181	15	C. C. Carpenter, M.D., Dean.....	46
47	OHIO									
47	University of Cincinnati College of Medicine, Cincinnati.....	3	57	37	81	76	321	76	Stanley Dorst, M.D., Dean.....	47
48	Western Reserve University School of Medicine, Cleveland.....	3	78	79	78	77	312	72	Joseph T. Westin, M.D., Dean.....	48
49	Ohio State University College of Medicine, Columbus.....	3	85	73	85	72	317	72	Charles A. Dean, M.D., Dean.....	49
50	OKLAHOMA									
50	University of Oklahoma School of Medicine, Oklahoma City.....	3	66	73	56	62	259	62	Mark R. Everett, Ph.D., Dean.....	50
51	OREGON									
51	University of Oregon Medical School, Portland.....	3	78	65	59	68	270	65	D. W. E. Baird, M.D., Dean.....	51
52	PENNSYLVANIA									
52	Hahnemann Medical College and Hospital of Philadelphia.....	3	105	88	94	114	165	112	Charles L. Brown, M.D., Dean.....	52
53	Jefferson Medical College of Philadelphia.....	3	166	152	151	152	621	148	William H. Perkins, M.D., Dean.....	53
54	Temple University School of Medicine, Philadelphia.....	3	133	103	99	124	179	124	William S. Parkinson, M.D., Dean.....	54
55	University of Pennsylvania School of Medicine, Philadelphia.....	3	119	106	125	120	179	127	John McK. Mitchell, M.D., Dean.....	55
56	Woman's Medical College of Pennsylvania, Philadelphia.....	3	59	42	81	55	158	55	Marion Fay, Ph.D., Dean.....	56
57	University of Pittsburgh School of Medicine, Pittsburgh.....	2	86	73	69	73	303	73	William S. McElroy, M.D., Dean.....	57
58	SOUTH CAROLINA									
58	Medical College of the State of South Carolina, Charleston.....	3	60	37	42	37	212	33	Kenneth M. Lynch, M.D., Dean.....	58
59	TENNESSEE									
59	University of Tennessee College of Medicine, Memphis.....	2	137	140	115	90	511	90	O. W. Hyman, Ph.D., Dean.....	59
60	Memphis Medical College, Nashville.....	2	67	63	44	38	234	58	Murray C. Brown, M.D., Director of Medical Education; Michael J. Bent, M.D., Dean.....	60
61	Texas									
61	Vanderbilt University School of Medicine, Nashville.....	Degree	33	49	51	51	207	51	Ernest W. Goodpasture, M.D., Dean.....	61
62	Southwestern Medical College, Dallas.....	3	61	54	55	51	224	59	W. Lee Hart, M.D., Dean.....	62
63	University of Texas School of Medicine, Galveston.....	3	108	90	69	80	317	80	Chauncey D. Leake, Ph.D., Vice President; D. Bailey Calvin, Ph.D., Dean of Student and Curricular Affairs.....	63
64	Baylor University College of Medicine, Houston.....	3	92	72	65	61	293	61	W. H. Moursund, M.D., Dean.....	64
65	UTAH									
65	University of Utah School of Medicine, Salt Lake City.....	3	39	51	40	37	178	36	Richard H. Young, M.D., Dean.....	65
66	VERMONT									
66	University of Vermont College of Medicine, Burlington.....	3	41	35	35	42	157	40	William Eustis Brown, M.D., Dean.....	66
67	VIRGINIA									
67	University of Virginia Department of Medicine, Charlottesville.....	2	72	50	50	60	250	59	Harvey E. Jordan, Ph.D., Dean.....	67
68	Medical College of Virginia, Richmond.....	3	51	77	71	82	314	83	Harvey B. Haug, M.D., Dean.....	68
69	WISCONSIN									
69	University of Wisconsin Medical School, Madison.....	3	76	83	60	59	278	59	William S. Middleton, M.D., Dean.....	69
70	Marquette University School of Medicine, Milwaukee.....	3	100	93	75	82	350	103	John S. Hirschboeck, M.D., Dean.....	70
	Totals.....		6,213	5,541	5,151	5,340	447#	2,343		

* On probation.

† 90 semester hours for veterans.

‡ Figures are for two graduating classes and include senior students reported in 1947 Educational Number.

Intern enrolment not included in total column.
§ No seniors or graduates due to deceleration.

thirty-three schools, twenty-nine would have to enlarge their facilities for instruction in the preclinical departments, and four their facilities for clinical instruction.

It should be understood that the expansion of a medical school involves much more than merely securing the use of a certain number of additional square feet of floor space for classrooms. Expansion also

pose a serious problem for schools located in the congested areas of big cities.

The problem of increasing enrolments is further complicated by the shortage of competent teachers that exists as a result of the failure during the war to allow young men to prepare themselves for careers in teaching and research. The effects of this policy will

TABLE 3.—Approved Medical Schools in Canada

Name and Location of School	Students by Classes, 1947-1948										Totals	Graduates July 1, 1947 to June 30, 1948	Executive Officer
	1949 Pre- medical Require- ment by Years	First Second Pre-medic- al Year	Pre-medic- al Year	Fresh- man	Sopho- more	Junior	Senior	Addi- tional Year	Re- quired Intern Year				
ALBERTA													
1 University of Alberta Faculty of Medicine, Edmonton.....	3	..	..	50	42	33	44	..	32	171	76*	John W. Scott, M.D., Dean ...	1
MANITOBA													
2 University of Manitoba Fac- ulty of Medicine, Winnipeg..	3	..	..	90	66	64	60	..	63	280	62	A. T. Mathers, M.D., Dean....	2
NOVA SCOTIA													
3 Dalhousie University Faculty of Medicine, Halifax.....	2	..	..	58	56	48	42	..	35	204	34	H. G. Grant, M.D., Dean.....	3
ONTARIO													
4 Queen's University Faculty of Medicine, Kingston	1	66	..	53	52	52	47	..	..	270	0#	G. Spencer Melvin, M.D., Dean	4
5 University of Western Ontario Faculty of Medicine, London	2	..	..	60	93	54	40	..	..	247	40	J. B. Collip, M.D., Dean.....	5
6 University of Toronto Faculty of Medicine, Toronto.....	2	150	182	162	162	159	130	..	..	945	129	J. A. MacFarlane, M.B., Dean	6
QUEBEC													
7 McGill University Faculty of Medicine, Montreal	4	..	..	115	107	133	122	..	..	477	119	Frederick Smith, M.D., Dean..	7
8 University of Montreal Fac- ulty of Medicine, Montreal ..	2	..	..	120	94	83	85	..	100	382	100	Edmond Dubé, M.D., Dean....	8
9 Laval University, Faculty of Medicine, Quebec	Degree	..	..	87	147	128	105	84	..	551	72	Charles Vézina, M.D., Dean....	9
Totals.....	..	216	182	795	810	756	675	84	230	3,527	632		

* Represents two graduating classes.
† Intern enrolment not included in total column.
No graduates due to deceleration.

TABLE 4.—Approved Schools of the Basic Medical Sciences in the United States and Canada

Name and Location of School	1949 Pre- medical Require- ment by Years	Students by Classes, 1947-1948			Executive Officer	
		Fresh- man	Sopho- more	Total		
MISSISSIPPI						
1 University of Mississippi School of Medicine, University.....	90 sem. hrs.	a { 28 33	b { 21 30	112	David S. Pankratz, M.D., Dean.....	1
MISSOURI						
2. University of Missouri School of Medicine, Columbia.....	3	43	30	73	Trawick H. Stubbs, M.D., Dean....	2
NEW HAMPSHIRE						
3 Dartmouth Medical School, Hanover.....	3	23	23	46	Rolf C. Syvertsen, M.D., Dean....	3
NORTH CAROLINA						
4 University of North Carolina School of Medicine, Chapel Hill.....	3	56	44	100	W. Reece Berryhill, M.D., Dean.....	4
NORTH DAKOTA						
5 University of North Dakota School of Medicine, Grand Forks *.....	3	30	21	51	W. F. Potter, M.D., Dean.	5
SOUTH DAKOTA						
6 University of South Dakota School of Medical Sciences, Vermillion *..	3	30	24	54	Donald Slaughter, M.D., Dean.....	6
WEST VIRGINIA						
7 West Virginia University School of Medicine, Morgantown.....	2	31	24	55	Edward J. Van Liere, M.D., Dean... ..	7
CANADA						
8 University of Saskatchewan School of Medical Sciences, Saskatoon...	2	32	23	55	W. S. Lindsay, M.B., Dean.	8
Totals.....		306	240	546		

* On probation.
a. Beginning date of second freshman class Feb. 2, 1948.
b. Beginning date of second sophomore class Nov. 3, 1947.

includes additional space in laboratories and hospitals and increases in equipment and teaching personnel. For the expanded instructional staff, in turn, additional office and laboratory space and technical personnel must be provided. A significant increase in enrolments in most schools would also necessitate enlargement of the administrative offices, library and animal quarters and an increase in the staffs of these departments. Any additional facilities that might be created would have to be satisfactorily integrated from a physical standpoint with existing facilities. This requirement would

handicap the medical schools in their efforts to expand their teaching staffs for several years to come. Consideration must also be given to the fact that for a number of schools the size and location of the community in which the school is situated would make it unlikely that sufficient additional clinical facilities could be developed to permit the training of more students.

In the section of this report on the financial support of medical schools, figures are presented which show that to conduct their present programs, the medical schools must secure from other sources three times

the sum they collect in tuition from students. Therefore, unlike certain other types of training in which the additional tuition collected would offset or more than offset the cost of an expanded program, the expansion of a medical school, if satisfactory standards are maintained, would require a substantial outlay of funds by the medical school.

The situation with respect to increasing enrolments in existing medical schools in the United States may be summarized by stating that no medical school could undertake to increase its entering class beyond present figures without making substantial alterations and additions to its physical plant and without securing additional financial support to meet the increased operating deficit that would result from the expanded program. For certain schools, the lack of available or potential clinical facilities in the community would make expan-

TABLE 5.—Schools, Students and Graduates in the United States, 1905-1948

Students in the required intern year are not included

	Schools	Students *	Graduates
1905.....	160	26,147	5,406
1910.....	131	21,526	4,410
1915.....	96	14,891	3,536
1920.....	85	13,728	3,047
1921.....	84	14,464	3,186
1922.....	81	15,635	2,529
1923.....	80	16,600	3,120
1924.....	79	17,728	3,562
1925.....	80	18,200	3,974
1926.....	79	18,640	3,982
1927.....	80	19,602	4,065
1928.....	80	20,545	4,561
1929.....	76	20,878	4,446
1930.....	76	21,507	4,565
1931.....	76	21,882	4,735
1932.....	76	22,185	4,936
1933.....	77	22,464	4,895
1934.....	77	22,788	5,065
1935.....	77	22,888	5,101
1936.....	77	22,664	5,183
1937.....	77	22,065	5,377
1938.....	77	21,887	5,104
1939.....	77	21,302	5,089
1940.....	77	21,271	5,007
1941.....	77	21,379	5,275
1942.....	77	22,031	5,163
1943.....	76	22,631	5,223
1944.....	77	23,329	5,134
1944 (second session).....	77	24,666	5,169
1945 (to June 30).....	77	24,038	5,156
1946 (to May 31).....	77	23,216	5,826
1947 (to June 30).....	77	23,900	6,389
1948 (to June 30).....	77	22,739	5,343

* Includes figures for schools of the basic medical sciences.
† Includes figures for additional classes.

sion under any circumstances impossible. Finally, it should be recognized that in some schools enrolments already approach the maximum compatible with the efficient conduct of a satisfactory program.

The total enrolment in the Canadian schools, including one basic science school, was 3,100, which is 118 greater than in the preceding session. There were 398 premedical and 84 fifth (not intern) year students in the Canadian schools. These figures are included in the "total" column of table 3, but not in the "total" column of table 7.

There were 447 students in the required intern year in the United States and 230 in Canada. The total number of students in the United States taking a required intern year is shown in table 16 for each of the academic years since 1930-1931.

Five medical schools in the United States had more than 500 students, excluding those in the intern year. Illinois with 634 students had the largest enrolment. Jefferson had 621, Northwestern 520, Tennessee 511 and Harvard 504.

Seven schools in this country had enrolments under 200. Alabama had 132 students, Vermont 153, Wom-

an's Medical 158, Albany 182, Bowman Gray 184 and Syracuse 190.

In Canada, Toronto with 613 students had the largest enrolment. This number does not include 332 stu-

TABLE 6.—Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1947 to June 30, 1948

	Graduates	Degrees	Per Cent with Degrees
Medical College of Alabama.....	0	0	0
University of Arkansas.....	55	25	45.5
University of California.....	68	48	70.6
College of Medical Evangelists.....	87	55	63.2
University of Southern California.....	58	34	58.7
Stanford University.....	57	57	100.0
University of Colorado.....	52	32	61.5
Yale University, (Connecticut).....	55	20	36.4
Georgetown University, (D. C.).....	75	19	25.3
George Washington University.....	80	19	23.8
Howard University.....	64	12	18.8
Emory University, (Georgia).....	48	7	14.6
University of Georgia.....	66	20	30.3
Stritch School of Medicine, (Illinois).....	67	12	17.9
Northwestern University.....	143	89	62.2
University of Chicago.....	51	44	86.3
University of Illinois.....	147	136	92.5
Indiana University.....	84	40	47.6
State University of Iowa.....	57	6	10.5
University of Kansas.....	56	40	71.4
University of Louisville, (Kentucky).....	144*	37	25.7
Louisiana State University.....	80	25	31.3
Tulane University of Louisiana.....	87	21	24.1
Johns Hopkins University, (Maryland).....	78	43	55.1
University of Maryland.....	77	50	64.9
Boston University, (Massachusetts).....	54	24	44.4
Harvard Medical School.....	140	57	40.7
Tufts College Medical School.....	94	30	31.9
University of Michigan.....	132	96	72.7
Wayne University.....	60	37	61.7
University of Minnesota.....	140*	140	100.0
St. Louis University, (Missouri).....	120	47	39.2
Washington University.....	90	37	41.1
Creghton University, (Nebraska).....	65	42	64.6
University of Nebraska.....	67	46	68.7
Albany Medical College, (New York).....	40	21	52.5
Long Island College of Medicine.....	92	40	43.5
University of Buffalo.....	74	28	37.8
Columbia University.....	100	73	73.0
Cornell University.....	78	48	61.5
New York Medical College.....	119	39	49.6
New York University.....	132	68	51.5
University of Rochester.....	66	32	48.5
Syracuse University.....	41	15	36.6
Duke University, (North Carolina).....	66	24	36.4
Bowman Gray School of Medicine.....	48	10	20.8
University of Cincinnati, (Ohio).....	76	30	39.5
Western Reserve University.....	77	50	64.9
Ohio State University.....	72	52	72.2
University of Oklahoma.....	62	21	33.8
University of Oregon.....	65	64	98.5
Hahnemann Med. College, (Pennsylvania).....	112	54	48.2
Jefferson Medical College.....	148	67	45.3
Temple University.....	124	77	62.1
University of Pennsylvania.....	127	44	34.7
Woman's Medical College.....	35	33	94.3
University of Pittsburgh.....	75	66	88.0
Medical College of South Carolina.....	63	33	52.3
University of Tennessee.....	99	32	32.3
Meharry Medical College.....	58	35	60.3
Vanderbilt University.....	54	44	81.5
Southwestern Medical College, (Texas).....	50	17	34.0
Baylor University.....	64	14	21.9
University of Texas.....	80	16	20.0
University of Utah.....	36	35	97.2
University of Vermont.....	40	31	77.5
University of Virginia.....	59	32	54.2
Medical College of Virginia.....	85	58	68.2
University of Wisconsin.....	59	59	100.0
Marquette University.....	169*	33	19.5
University of Alberta, (Canada).....	76*	69	90.8
University of Manitoba.....	62	20	32.3
Dalhousie University.....	34	10	29.4
Queen's University.....	0	0	0
University of Western Ontario.....	40	8	20.0
University of Toronto.....	129	16	12.4
McGill University.....	119	92	77.3
University of Montreal.....	100	100	100.0
Laval University.....	72	72	100.0
Totals.....	6,175	3,279	52.1

* Includes two classes.

dents in the premedical years. The smallest enrolment in Canada was at Alberta, with 171 students.

The total enrolment in the schools of the basic medical sciences in this country was 491. Mississippi with 112 students and North Carolina with 100 had the largest enrolments.

In table 8, enrolments in the various classes in the medical and basic science schools in the United States are given for each academic session since 1930-1931. During the 1947-1948 session there were 77 fewer freshmen, 183 more sophomores, 613 fewer juniors and 654 fewer seniors than were reported in 1946-1947. It should be pointed out again that the statistics for 1946-1947 included figures for fifteen additional classes in six schools. A more accurate comparison can be made if these additional classes are not included. Such a comparison shows that there were 230 more freshmen, 451 more sophomores, 383 fewer juniors and 328 fewer seniors in 1947-1948 than in the preceding session.

It should be noted that prior to 1942-1943 the totals shown in table 6 are somewhat higher than the sum

TABLE 7.—Total Enrolments by Classes in Medical Schools of the United States and Canada for the 1947-1948 Session

Students in the required intern year are not included					
	Freshmen	Sophomores	Juniors	Seniors	Total
70 Medical Schools (U. S.)	6,213	5,541	5,151	5,340	22,245
7 Basic Science Schools (U. S.)	274	217	.....	.....	491
Totals (U. S.)	6,487	5,758	5,151	5,340	22,739
9 Medical Schools (Canada)	795	819	756	675	3,045*
1 Basic Science School (Canada)	32	23	.....	.....	55
Totals (Canada)	827	842	756	675	3,100*
Grand totals (U. S. and Canada)	7,314	6,600	5,910	6,015	25,839

* Does not include 398 premedical and 84 fifth year students.

† Does not include 399 premedical and 34 fifth year students.

TABLE 8.—Students in the Medical and Basic Science Schools in the United States, 1931-1948

Students in the required intern year are not included

	Freshman	Sophomore	Junior	Senior	Total
1930-1931	6,456	5,533	5,030	4,903	21,922
1931-1932	6,260	5,462	4,932	4,855	21,510
1932-1933	6,426	5,479	5,017	4,948	21,870
1933-1934	6,457	5,571	4,988	4,937	22,953
1934-1935	5,356	5,624	5,142	4,905	21,027
1935-1936	6,605	5,458	5,230	5,020	22,313
1936-1937	5,910	5,269	5,140	5,153	21,472
1937-1938	5,791	5,225	4,956	5,030	21,002
1938-1939	5,764	5,160	4,947	4,921	20,792
1939-1940	5,794	5,177	4,921	4,894	20,786
1940-1941	5,837	5,254	4,969	4,840	20,900
1941-1942	6,218	5,400	5,087	4,942	21,647
1942-1943	6,425	5,828	5,278	5,100	22,631
1943-1944	6,561	6,071	5,640	5,257	23,529
1944 (second session)	6,648	6,140	6,034	5,794	24,616
1944-1945	6,523	5,970	5,700	5,826	24,019
1945-1946	6,060	5,750	5,751	5,655	23,216
1946-1947	6,564	5,575	5,707	5,994	23,840
1947-1948	6,487	5,758	5,151	5,340	22,739

* Includes additional classes.

of the figures for the various classes in a given year. The discrepancy resulted from the inability of certain schools to classify strictly their students into the conventional graded classes.

Veterans in Medical Schools

The percentage of veterans enrolled in the medical schools and schools of the basic medical sciences in the United States increased from 55.6 per cent in the preceding year to 60.9 per cent in 1947-1948. Of the 22,739 students, 13,837 were veterans. Seventy-five of the veterans were women. In table 9 the composition of the student body of the medical schools and schools of the basic medical sciences in this country is recapitulated by classes.

Veterans comprised 73.4 per cent of the freshman class as compared to 62.8 per cent the preceding year. The percentage of veterans for other classes were sophomores 64.8 per cent, juniors 53.6 per cent and seniors 48.6 per cent.

TABLE 9.—Enrolment by Classes of Veterans and Non-Veterans in the Medical and Basic Science Schools in the United States, 1947-1948

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen	4,712	1,261	5,973	25	479	514	6,487
Sophomores	3,701	1,456	5,157	21	670	691	5,758
Juniors	2,751	1,742	4,493	7	651	658	5,151
Seniors	2,505	2,359	4,864	2	384	386	5,250
Totals	13,762	6,818	20,580	75	2,084	2,159	22,739

Distributions of Students by Sex

In table 10 the students enrolled in all the medical and basic science schools in the United States and Canada during the academic year 1947-1948 are classified according to sex. Graduates of the medical schools during the period July 1, 1947 to June 30, 1948 are also classified according to sex in the same table.

Table 11 shows the numbers and percentages of women medical students and graduates in the United States since 1905. In 1947-1948 women totaled 2,159 or 9.5 per cent of the medical students in this country. While the total is 24 less than for the preceding year, the percentage of women increased by 0.4 per cent and represents the highest percentage of women medical students ever recorded in the United States. The percentage of women in the freshman class decreased from 11.1 per cent in the preceding year to 7.9 per cent. The actual number declined from 708 to 514.

Four schools had no women medical students: St. Louis, Dartmouth, Jefferson and North Dakota. Georgetown admitted women students for the first time during 1947-1948. St. Louis has reported that it will admit women beginning with the academic year 1948-1949. One school, the Woman's Medical College, had no men students.

During the past four years the number of medical schools in addition to the Woman's Medical College enrolling more than 30 women has increased from seven to twenty-four. From figures presently available it is estimated that about 7 per cent of the entering class in 1948 will be women.

In Canada women numbered 262, or 7.8 per cent of the total enrolment.

Geographic Source of Freshman Students, 1947-1948

The residence of students in the 1947-1948 freshman class of each medical and basic science school in the United States and Canada is shown in table 12. It is recognized that the residence of certain students may be of brief duration, so that their real geographic source may not be revealed by their residence on entering medical school. On the other hand, the birth place of students is probably no better a criterion of geographic origin, since appreciable numbers of people have permanent residence elsewhere than in the states of their birth.

Table 12 reports the residence of 828 freshman students in Canadian schools. This figure differs somewhat from the freshman enrolment figures given in other tables because table 12 employs the figure for the

first class of premedical students at Queen's and Toronto, since these students are already registered in those schools.

In table 13 is shown the number of first year medical students from each state per hundred thousand inhabitants. For the nation as a whole there were 4.3 fresh-

TABLE 10.—Distribution of Students and Graduates by Sex in the United States and Canada, 1947-1948

	Students		Graduates	
	Men	Women	Men	Women
Medical College of Alabama.....	118	11	0	0
University of Arkansas.....	263	11	52	3
University of California.....	244	59	58	10
College of Medical Evangelists.....	285	34	83	4
University of Southern California.....	238	13	55	3
Stanford University.....	214	28	53	4
University of Colorado.....	209	24	49	3
Yale University, (Connecticut).....	194	28	47	8
Georgetown University, (D. C.).....	262	7	75	0
George Washington University.....	281	34	75	5
Howard University.....	244	40	61	3
Emory University, (Georgia).....	106	14	42	6
University of Georgia.....	279	11	63	3
Stritch School of Medicine, (Illinois).....	257	20	63	4
Northwestern University.....	469	21	137	6
University of Chicago.....	263	29	48	3
University of Illinois.....	553	51	130	17
Indiana University.....	268	28	78	6
State University of Iowa.....	251	27	55	2
University of Kansas.....	283	25	51	5
University of Louisville, (Kentucky).....	300	16	137	7
Louisiana State University.....	274	34	71	9
Tulane University of Louisiana.....	437	40	92	5
Johns Hopkins University, (Maryland).....	258	39	71	7
University of Maryland.....	265	27	72	6
Boston University, (Massachusetts).....	212	23	51	3
Harvard Medical School.....	482	22	110	0
Tufts College Medical School.....	351	43	87	7
University of Michigan.....	412	61	111	21
Wayne University.....	219	7	59	1
University of Minnesota.....	352	39	128	12
University of Mississippi.....	165	7	..	..
University of Missouri.....	66	7	..	..
St. Louis University.....	432	0	120	0
Washington University.....	323	37	83	7
Creighton University, (Nebraska).....	229	15	63	2
University of Nebraska.....	277	16	61	3
Dartmouth Medical School.....	46	0	..	..
Albany Medical College.....	155	27	32	8
Long Island Medical College.....	355	49	88	4
University of Buffalo.....	249	24	71	3
Columbia University.....	372	60	90	10
Cornell University.....	278	57	72	6
New York Medical College.....	380	66	108	11
New York University.....	418	69	121	11
University of Rochester.....	237	30	59	7
Syracuse University.....	160	30	39	2
University of North Carolina.....	89	11	..	..
Duke University.....	252	18	64	2
Bowman Gray School of Medicine.....	171	13	47	1
University of North Dakota.....	51	0	..	..
University of Cincinnati, (Ohio).....	293	29	73	3
Western Reserve University.....	283	29	73	4
Ohio State University.....	295	22	68	4
University of Oklahoma.....	234	25	59	3
University of Oregon.....	247	23	60	5
University of Pennsylvania.....	365	40	108	4
Woman's Medical College.....	621	0	148	0
University of Pittsburgh.....	469	50	114	10
Medical College of South Carolina.....	435	44	118	9
University of South Dakota.....	284	10	72	3
University of Tennessee.....	292	10	33	0
Meharry Medical College.....	486	25	66	3
Vanderbilt University.....	205	20	52	6
Southwestern Medical College, (Texas).....	191	16	32	2
University of Texas.....	292	22	48	2
Baylor University.....	312	35	73	7
University of Utah.....	274	10	62	2
University of Vermont.....	167	11	36	0
University of Virginia.....	131	22	37	3
Medical College of Virginia.....	230	11	54	5
West Virginia University.....	283	31	77	8
University of Wisconsin.....	48	7	..	..
Marquette University.....	227	51	51	8
University of Alberta, (Canada).....	318	32	152	17
University of Manitoba.....	156	15	69	7
Dalhousie University.....	253	27	39	3
Queen's University *.....	197	7	34	0
University of Western Ontario.....	192	12	0	0
University of Toronto *.....	228	10	36	4
McGill University.....	525	88	114	13
University of Montreal.....	444	33	109	10
Laval University *.....	362	20	94	6
University of Saskatchewan.....	460	7	68	4
Totals.....	23,447	2,392	5,734	441

* Excludes 66 and 332 premedical students respectively.

† Excludes 84 fifth year students

man medical students per hundred thousand inhabitants. The twelve states without medical or basic science schools had an average of 3.3 first year students per hundred thousand of population. Those states with medical or basic science schools had an average of 4.9 students per hundred thousand of population enrolled as freshmen. This is the second successive year in which states with medical schools have sent a significantly larger proportion of their population to medical schools than those states without medical schools. Prior to 1946-1947, statistics showed that states with and states without medical schools sent almost identical proportions of their populations to medical schools.

In 1946-1947 it was reported that 14.8 per cent of the freshman students admitted by state and municipal schools were nonresidents. During the current year only 9.8 per cent of the freshmen enrolled in these schools were out of state students. In the private

TABLE 11.—Women in Medicine in the United States

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905.....	1,073	4.1	219	4.0
1910.....	907	4.0	116	2.6
1915.....	592	4.0	92	2.6
1920.....	818	5.8	122	4.0
1925.....	910	5.0	204	5.1
1926.....	935	5.0	212	5.4
1927.....	964	4.9	189	4.7
1928.....	920	4.5	207	4.9
1929.....	925	4.4	214	4.8
1930.....	955	4.4	204	4.5
1931.....	990	4.5	217	4.6
1932.....	955	4.3	308	4.2
1933.....	1,056	4.7	214	4.4
1934.....	1,090	4.5	211	4.2
1935.....	1,077	4.7	307	4.1
1936.....	1,133	5.0	246	4.7
1937.....	1,115	5.1	238	4.4
1938.....	1,161	5.4	237	4.6
1939.....	1,144	5.4	260	5.1
1940.....	1,145	5.4	233	5.0
1941.....	1,146	5.4	280	5.3
1942.....	1,164	5.3	279	5.4
1943.....	1,150	5.1	241	4.6
1944.....	1,176	5.0	239	4.7
1944 (Second session).....	1,141	4.6	252	4.9
1945 (to June 30).....	1,352	5.6	262	5.1
1946 (to May 31).....	1,868	8.0	242	4.2
1947 (to June 30)*.....	2,183	9.1	242	5.4
1948 (to June 30).....	2,139	9.5	392	7.1

* Includes additional classes.

schools 51.3 per cent of the freshmen in 1947-1948 were nonresidents, which is almost identical with the figure 51.4 per cent for 1946-1947.

There are indications that several of the states without medical schools are becoming concerned that their residents are not gaining admission to medical schools in the same proportion as those of other states. In certain states the solution to the problem may lie in the development of a medical school within the state. Several of the states in question, however, are not in a position to establish and maintain acceptable medical schools. For these states the solution may lie in their entering into an arrangement with an existing medical school under the terms of which the state will contribute to the support of the medical school if the school will agree to accept a certain number of qualified students each year from that state. Such a program of regional support is not entirely new, but it is being studied with increasing interest by a number of states. It would appear to be the most logical plan for meeting the needs of those states which do not have the resources or clinical facilities necessary for developing satisfactory medical schools of their own.

TABLE 12.—Residence of Freshman Medical Students

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Marshall Number	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	District of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Marshall Number
1 Medical College of Alabama.....	52															1
2 University of Arkansas School of Medicine.....			90													2
3 University of California Medical School.....			67													3
4 College of Medical Evangelists.....			1	13	5	1		1	1	1	1		2	1		4
5 University of Southern California School of Medicine.....			3	59												5
6 Stanford University School of Medicine.....			1	51	1	1					1					6
7 University of Colorado School of Medicine.....					58											7
8 Yale University School of Medicine.....			1	2		10						1	4	3		8
9 Georgetown University School of Medicine.....						6		6				1				9
10 George Washington University School of Medicine.....			2	1	6			25	1		1					10
11 Howard University College of Medicine.....								4	1			2				11
12 Emory University School of Medicine.....								14	30			1				12
13 University of Georgia School of Medicine.....									77							13
14 Stritch School of Medicine of Loyola University.....								1				48	5			14
15 Northwestern University Medical School.....			1	1	7	1				2	20	8	8	3		15
16 University of Chicago, The School of Medicine.....				1	1	3				1	32		1	2		16
17 University of Illinois College of Medicine.....				1	1						151		1			17
18 Indiana University School of Medicine.....									1			1	125			18
19 State University of Iowa College of Medicine.....													88			19
20 University of Kansas School of Medicine.....														76		20
21 University of Louisville School of Medicine.....									1			7				21
22 Louisiana State University School of Medicine.....			2					14	4		1	1				22
23 Tulane University of Louisiana School of Medicine.....			10		3				1		1					23
24 Johns Hopkins University School of Medicine.....					2	1		3	4	4		2	2	1		24
25 University of Maryland School of Medicine.....					3	2						2	2		1	25
26 Boston University School of Medicine.....			1		3	2						2	2			26
27 Harvard Medical School.....			7	1	8	3	3		2	1	2	3	2	3		27
28 Tufts College Medical School.....					1		9		1							28
29 University of Michigan Medical School.....									2			2		1		29
30 Wayne University College of Medicine.....																30
31 University of Minnesota Medical School.....												1		1		31
32 University of Mississippi School of Medicine.....																32
33 University of Missouri School of Medicine.....																33
34 St. Louis University School of Medicine.....			1	1								9	3		1	34
35 Washington University School of Medicine.....			1		3	4	2				1	6	2			35
36 Creighton University School of Medicine.....			1		22	2						1				36
37 University of Nebraska College of Medicine.....														1		37
38 Dartmouth Medical School.....												2				38
39 Albany Medical College.....																39
40 Long Island College of Medicine.....																40
41 University of Buffalo School of Medicine.....																41
42 Columbia University College of Physicians and Surgeons.....				1		4	1	6	1	2		1	2			42
43 Cornell University Medical College.....			1						2			1			1	43
44 New York Medical College, Flower and Fifth Avenue Hospitals.....						2	10					1				44
45 New York University College of Medicine.....						4	2		1							45
46 University of Rochester School of Medicine and Dentistry.....						8	2	1		1	2	1	2	1		46
47 Syracuse University College of Medicine.....							1		1							47
48 University of North Carolina School of Medicine.....									1							48
49 Duke University School of Medicine.....						1			6	4		1	1			49
50 Bowman Gray School of Medicine.....			1													50
51 University of North Dakota School of Medicine.....																51
52 University of Cincinnati College of Medicine.....												1		3	1	52
53 Western Reserve University School of Medicine.....									1			1	1			53
54 Ohio State University College of Medicine.....																54
55 University of Oklahoma School of Medicine.....																55
56 University of Oregon Medical School.....						3										56
57 Hahnemann Medical College.....						4		2	1			2	1			57
58 Jefferson Medical College of Philadelphia.....						1	1	1				2	1			58
59 Temple University School of Medicine.....							3	2	5	1	1	2				59
60 University of Pennsylvania School of Medicine.....						1		1	2		1		3	1	1	60
61 Woman's Medical College of Pennsylvania.....							10	1		1		1	1			61
62 University of Pittsburgh School of Medicine.....																62
63 Medical College of the State of South Carolina.....																63
64 University of South Dakota School of Medical Sciences.....						2								2		64
65 University of Tennessee College of Medicine.....																65
66 Meharry Medical College.....						7	1	1		1	3	7	6		1	66
67 Vanderbilt University School of Medicine.....						2			3	2		1	1			67
68 Southwestern Medical College.....						1						1				68
69 University of Texas School of Medicine.....																69
70						2										70
71						1		1				2				71
72								1								72
73									1				1			73
74									3							74
75																75
76																76
77												5	1			77
78																78
79 University of Manitoba Faculty of Medicine.....																79
80 Dalhousie University Faculty of Medicine.....																80
81																81
82																82
83																83
84															1	84
85																85
86																86
87 University of Saskatchewan School of Medical Sciences.....																87
Totals.....	91	17	101	325	76	78	7	46	76	134	28	339	169	126	92	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

* Figures include two freshman classes.

† Figures are for students in beginning premedical year.

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Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions	Canada	Foreign	Totals
106	140	10	87	197	236	143	98	128	18	101	7	17	21	12	745	142	36	332	86	56	473	12	87	35	196	328	60	33	166	54	76	162	10	76	816	73	7,315
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
106	140	10	87	197	236	143	98	128	18	101	7	17	21	12	745	142	36	332	86	56	473	12	87	35	196	328	60	33	166	54	76	162	10	76	816	73	7,315

In table 14 is recapitulated the number of resident students, students from other states, students from United States territories and possessions, Canadian students and foreign students enrolled in the 1947-1948 freshman class in each school in the United States and Canada.

In 1946-1947 six schools did not admit any out of state students. In the two preceding years every medical school in the United States had accepted some out of state students. During 1947-1948, the number of schools that admitted no out of state students increased to nine. They were Alabama, Georgia, Wayne, Mississippi, Missouri, Oklahoma, South Carolina, Texas and West Virginia. Five schools admitted only 1 or 2 nonresidents. Twenty-two schools admitted more nonresident than resident students, and one school admitted an equal number of residents and nonresidents.

TABLE 13.—Ratio of Freshman Medical Students¹ to State Populations, Academic Year 1947-1948

Number of students per 100,000 of population² in the medical and basic science schools of the United States

*Rhode Island.....	1.6	Pennsylvania.....	4.6
*Maine.....	2.1	South Carolina.....	4.6
*New Mexico.....	2.2	Indiana.....	4.7
*Delaware.....	2.4	Mississippi.....	4.7
North Carolina.....	2.5	Texas.....	4.7
*Washington.....	2.5	Iowa.....	4.8
*Arizona.....	2.6	Kansas.....	4.8
New Hampshire.....	3.1	Minnesota.....	4.9
Alabama.....	3.2	Wisconsin.....	4.9
*Florida.....	3.2	*Nevada.....	5.0
California.....	3.3	*New Jersey.....	5.0
Missouri.....	3.3	Arkansas.....	5.3
*Montana.....	3.7	New York.....	5.3
Oklahoma.....	3.7	District of Columbia.....	5.5
Oregon.....	3.7	Louisiana.....	5.5
*Wyoming.....	3.7	*Idaho.....	5.7
Kentucky.....	3.8	Virginia.....	5.7
Michigan.....	3.8	South Dakota.....	6.2
Maryland.....	4.0	Tennessee.....	6.4
West Virginia.....	4.1	North Dakota.....	6.5
Georgia.....	4.2	Colorado.....	6.7
Illinois.....	4.2	Nebraska.....	7.8
Massachusetts.....	4.2	Vermont.....	9.1
*Connecticut.....	4.3	Utah.....	9.4
Ohio.....	4.5		

* State with no medical or basic science school.

1. Calculations based on one freshman class for each school.

2. 1947 estimate of U. S. Census Bureau.

There were 74 freshman students, 14 fewer than in 1946-1947, from the territories and possessions of the United States. All these students were enrolled in schools in the United States. Attention has been called recently to Puerto Rico's need for additional well trained physicians.¹ It has been suggested that this need can be met if the medical schools in the United States will admit 30 to 50 properly qualified students from Puerto Rico annually. During 1946-1947, 67 students from Puerto Rico were enrolled in the freshman classes of the medical schools in the United States, while in 1947-1948 the number was 57. It is to be hoped that similar numbers of well qualified students from Puerto Rico will continue to find opportunities for training in this country in the years ahead.

Twenty-two students from Canada were enrolled as freshmen in schools in this country. Fifty-eight students from other foreign countries, 4 more than in 1946-1947, were enrolled in the freshman classes in twenty-eight medical schools in the United States.

Of the 828 beginning students in the Canadian schools, 19 came from the United States in 1947-1948. This number is 6 more than in the preceding year. Canadian schools enrolled 15 beginning students from other foreign countries.

TABLE 14.—Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1947-1948

	Home State	Other State	Terr. & Poss.	Canadian	Foreign	Totals
Medical College of Alabama.....	52	0	0	0	0	52
University of Arkansas.....	90	1	0	0	0	91
University of California.....	63	2	1	0	1	72
College of Medical Evangelists.....	13	43	3	12	8	79
University of Southern California.....	50	8	0	0	0	67
Stanford University.....	51	9	2	0	1	63
University of Colorado.....	58	2	0	0	0	60
Yale University (Connecticut).....	10	47	1	0	2	60
Georgetown University (District of Columbia).....	6	108	4	0	2	120
George Washington University.....	25	60	2	0	1	83
Howard University.....	4	61	2	0	8	75
Emory University (Georgia).....	20	34	1	0	0	65
University of Georgia.....	77	0	0	0	0	77
Stritch School of Medicine (Illinois).....	48	38	1	0	1	88
Northwestern University.....	50	75	0	0	2	127
University of Chicago.....	32	22	0	0	0	64
University of Illinois.....	151	16	0	0	0	167
Indiana University.....	125	4	0	0	1	130
State University of Iowa.....	88	2	0	0	0	90
University of Kansas.....	76	7	1	0	0	84
University of Louisville (Kentucky).....	80	13	3	0	0	96
Louisiana State University.....	93	4	1	0	2	100
Tulane University of Louisiana.....	42	100	1	0	0	143
Johns Hopkins University (Maryland).....	13	55	1	0	4	73
University of Maryland.....	49	45	2	0	0	96
Boston University (Massachusetts).....	28	38	2	1	1	70
Harvard Medical School.....	18	88	2	0	3	111
Tufts College Medical School.....	88	24	0	0	0	112
University of Michigan.....	111	17	1	1	0	130
Wayne University.....	68	0	0	0	0	68
University of Minnesota.....	114	9	0	0	0	123
University of Mississippi.....	61	0	0	0	0	61
University of Missouri.....	43	0	0	0	0	43
St. Louis University.....	19	92	3	0	1	115
Washington University.....	33	50	2	0	1	86
Creighton University (Nebraska).....	11	59	3	0	2	75
University of Nebraska.....	83	5	1	0	0	89
Dartmouth Med. School (New Hampshire).....	2	21	0	0	0	23
Albany Medical College (New York).....	37	10	1	0	0	48
Long Island College of Medicine.....	83	29	0	1	0	113
University of Buffalo.....	48	21	1	0	1	71
Columbia University.....	59	50	1	0	4	114
Cornell University.....	41	44	0	0	0	85
New York Medical College.....	78	46	0	0	0	124
New York University.....	98	25	0	0	1	124
University of Rochester.....	23	34	0	1	0	68
Syracuse University.....	38	15	2	0	1	56
University of North Carolina.....	47	9	0	0	0	56
Duke University.....	24	46	2	0	1	73
Bowman Gray School of Medicine.....	41	13	0	0	0	54
University of North Dakota.....	25	5	0	0	0	30
University of Cincinnati (Ohio).....	73	14	0	0	0	87
Western Reserve University.....	57	19	0	0	2	78
Ohio State University.....	84	1	0	0	0	85
University of Oklahoma.....	66	0	0	0	0	66
University of Oregon.....	46	26	0	0	0	72
Hahnemann Med. College (Pennsylvania).....	51	48	6	0	0	105
Jefferson Medical College.....	99	63	2	0	2	166
Temple University.....	72	52	8	0	1	133
University of Pennsylvania.....	64	50	3	0	2	119
Woman's Medical College.....	7	40	2	0	1	50
University of Pittsburgh.....	83	3	0	0	0	86
Medical College of South Carolina.....	60	0	0	0	0	60
University of South Dakota.....	23	7	0	0	0	30
University of Tennessee.....	152	5	0	0	0	157
McHarr Medical College.....	6	58	1	0	2	67
Vanderbilt University.....	25	27	0	0	1	53
Southwestern Medical College (Texas).....	54	4	3	0	0	61
Baylor University.....	89	4	0	0	0	93
University of Texas.....	108	0	0	0	0	108
University of Utah.....	43	7	0	0	0	50
University of Vermont.....	28	13	0	0	0	41
University of Virginia.....	57	15	0	0	0	72
Medical College of Virginia.....	68	15	1	0	0	84
West Virginia University.....	31	0	0	0	0	31
University of Wisconsin.....	74	1	1	0	0	76
Marquette University.....	60	40	0	0	0	100
University of Alberta (Canada).....	50	0	0	0	0	50
University of Manitoba.....	90	0	0	0	0	90
Dalhousie University.....	52	0	0	0	5	57
Queen's University.....	63	2	0	0	1	66
University of Western Ontario.....	50	1	0	0	0	51
University of Toronto.....	149	0	0	0	1	150
McGill University.....	93	16	0	0	6	115
University of Montreal.....	118	0	0	0	2	120
Laval University.....	87	0	0	0	0	87
University of Saskatchewan.....	32	0	0	0	0	32
Totals.....	5,094	2,050	74	22	75	7,315

Required Internships

The medical schools that require students to serve an internship before they are granted the degree of Doctor of Medicine are shown in table 15. Six schools in the United States and four in Canada have this requirement. During the past year, Alberta discontinued the requirement, while Queen's instituted it for classes entering in September 1947, and subsequently.

During the academic year 1947-1948 there were 447 students from schools in this country and 230 from Canada in the required year of internship training or

TABLE 15.—Medical Schools Requiring an Internship

United States	
College of Medical Evangelists	
University of Southern California School of Medicine	
Stanford University School of Medicine	
Northwestern University Medical School	
University of Minnesota Medical School	
Duke University School of Medicine	
Canada	
University of Manitoba Faculty of Medicine	
Dalhousie University Faculty of Medicine	
University of Montreal Faculty of Medicine	
Queen's University Faculty of Medicine	

* Degree not withheld until internship completed.
† Effective for students entering in September 1947

research. The number of students from schools in this country in the required intern year is shown for each year since 1930-1931 in table 16.

States requiring the internship for licensure are listed in table 17. There are twenty-three such states. In addition, the District of Columbia, Alaska, Hawaii, the Virgin Islands, the Canal Zone and the homeopathic board of Connecticut require an internship for licensure. Puerto Rico now requires a two year rotating internship.

The licensing boards of the Canal Zone, Delaware, Hawaii, Idaho, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, Utah, Vermont, Washington and Wisconsin require the internship to be a rotating service.

Five states (Connecticut, Maryland, Missouri, Texas and Virginia) whose laws do not require internship

TABLE 16.—Students in the Required Intern Year in the United States, 1931-1948

1930-1931.....	1,025
1931-1932.....	1,007
1932-1933.....	1,106
1933-1934.....	1,183
1934-1935.....	1,233
1935-1936.....	1,213
1936-1937.....	1,255
1937-1938.....	1,132
1938-1939.....	1,152
1939-1940.....	1,162
1940-1941.....	1,058
1941-1942.....	707
1942-1943.....	629
1943-1944.....	451
1944 (second session).....	447
1944-1945.....	452
1945-1946.....	488
1946-1947*.....	582
1947-1948.....	447

* Includes additional class.

training withhold the licenses of candidates from schools requiring an internship for the degree of Doctor of Medicine until the internship is completed. In these states the examination may be taken at any time after completion of the medical school course.

Some states in addition to those listed in table 17 require an internship of graduates from schools outside the United States and Canada and of applicants for reciprocity or endorsement.

The hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states requiring an internship for licensure.

TABLE 17.—Medical Licensing Boards Requiring a One Year Internship †

Alabama *	Michigan *	Puerto Rico ‡
Alaska *	Montana	Rhode Island *
Canal Zone *	Nevada	South Dakota
Connecticut (Homeo. Board)	New Hampshire	Utah *
Delaware *	New Jersey *	Vermont *
District of Columbia	New Mexico	Virgin Islands
Hawaii *	North Dakota *	Washington *
Idaho *	Oklahoma	West Virginia
Illinois *	Oregon	Wisconsin *
Iowa *	Pennsylvania *	Wyoming

† Some states in addition to those included in this table require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.

* Internship must be a rotating service.

‡ Two year rotating internship required.

The current list of approved internships was published in the May 1, 1948 issue of THE JOURNAL. Additions to this list appear on page 43 of this issue.

Length of the Academic Year

The length of the academic year in the medical schools and schools of the basic medical sciences in the United States shows considerable variation. For the first and second years it varies from 31 to 44 weeks and averages 34.2 weeks and 34.4 weeks respectively. The third year ranges from 31 to 45.5 weeks and averages 34.9 weeks. The range for the fourth year is from 31 to 52 weeks. The average is 35.7 weeks.

Since the year 1939-1940, nineteen schools have increased the length of the first and second years, eighteen the length of the third year, and seventeen the length of the fourth year. During the same period eight schools have shortened the first year, six the second year, and five the third and fourth years. The net effect of these changes has been to increase the average length of the total medical school course, excluding a required intern year, in the United States from 136.4 weeks to 139.2 weeks.

Graduate, Part Time and Special Students

In table 18 are listed for the United States and Canada those students other than regular medical students and students in a required intern year who were pursuing courses in the medical schools in 1947-1948.

During this period 813 physicians were enrolled in thirty-seven medical schools in the United States for work leading to advanced degrees. In Canada 257 physicians were enrolled for similar work in seven schools. Minnesota with 225 reported the largest number of such students. In Canada, McGill had 166 physicians enrolled.

Forty-three medical schools in the United States enrolled a total of 1,090 other graduate students who were working for advanced degrees in the basic medical sciences. The largest number, 200, was at the University of Chicago. In Canada 68 graduate students were enrolled. Forty-one of these were at McGill.

The number of graduate students enrolled in the medical schools is the highest since the beginning of the war. The number is not significantly greater than before the war, however. It would appear therefore that the deficiency of trained teachers and investigators that was allowed to develop during the war is not being made up as rapidly as might be hoped.

In addition to graduate students, there were 478 other nonmedical students taking medical courses in the United States and 60 in Canada.

Thirty-seven medical schools in the United States reported a total of 2,338 physicians enrolled in formal basic science courses in preparation for certification by a specialty board. The highest enrolments in such courses were reported by Wayne and Northwestern, which had 234 and 231 students respectively. There were 100 physicians enrolled in similar courses in four Canadian schools.

Fifty-one medical schools in the United States reported a total enrolment of 13,187 physicians in

is impressive evidence that the educational responsibilities of the medical schools extend beyond the undergraduate student body to another body of students which is approximately three fourths as large. Furthermore this group does not include the interns or all the residents who receive clinical instruction from medical school departments, nor does it include the students in dentistry, nursing, pharmacy and various technical fields who in many schools receive part of their instruction in a medical school.

Premedical Training

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved

TABLE 18.—Other Students Enrolled in Medical Schools, 1947-1948

School	Physicians Enrolled for Advanced Degrees	Graduate Students Enrolled for Degrees in the Basic Medical Sciences	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Enrolled in Refresher or Continuation Courses	Part Time or Special Medical Students Working Toward M.D. Degree	Totals
Medical College of Alabama...	1	1	36	11	3	2	54
University of Arkansas...	0	3	9	0	0	6	18
College of Medical Evangelists (Calif.)...	0	0	0	46	0	0	46
Stanford University...	0	0	0	0	180	0	180
University of California...	0	0	0	0	727	0	727
University of Southern California...	3	0	0	127	667	0	797
University of Colorado...	3	35	0	88	430	10	566
Yale University (Connecticut)...	0	77	9	100	185	0	371
George Washington University (D. C.)...	0	0	0	0	535	0	535
Georgetown University...	1	3	4	0	43	0	51
Emory University (Georgia)...	0	0	25	0	150	1	176
University of Georgia...	0	0	3	0	99	11	113
Strich Sch. of Med. (Ill.)...	1	5	1	3	0	4	14
Northwestern University...	79	50	30	231	32	6	428
University of Chicago...	14	260	0	3	0	0	217
University of Illinois...	42	55	3	49	268	2	419
Indiana University...	2	8	12	20	447	1	490
State University of Iowa...	20	24	0	63	597	0	704
University of Kansas...	18	2	5	27	686	2	740
University of Louisville (Ky.)...	4	1	3	0	71	2	81
Louisiana State University...	0	0	0	82	30	0	112
Tulane University...	12	0	0	31	242	1	286
Johns Hopkins Univ. (Md.)...	0	0	2	0	59	5	66
University of Maryland...	2	7	2	0	128	1	140
Boston University (Mass.)...	0	21	0	0	0	0	21
Harvard Medical School...	0	35	0	0	602	0	637
Tufts College Medical School...	2	6	0	52	536	0	596
University of Michigan...	0	0	0	0	0	1	1
Wayne University...	118	21	0	234	116	0	489
University of Minnesota...	225	157	5	57	415	0	859
University of Mississippi...	1	2	58	0	0	3	64
St. Louis University (Mo.)...	52	27	16	14	0	1	110
University of Missouri...	0	13	13	0	0	0	26
Washington University...	0	45	0	129	172	0	346
Creighton University (Neb.)...	6	0	2	0	0	7	15
University of Nebraska...	8	9	0	0	28	1	46
Dartmouth Medical School (New Hampshire)...	0	0	0	0	40	0	40
Albany Medical College (New York)...	0	0	0	0	0	3	3
Columbia University...	14	0	0	200	970	0	1,184
Cornell University...	0	17	0	22	163	0	202
Long Island Coll. of Medicine...	28	0	0	0	500	0	618
New York Medical College...	22	0	0	41	148	0	214
New York University...	4	20	6	160	643	0	833
Syracuse University...	0	5	0	0	90	0	95
University of Buffalo...	0	0	0	0	0	3	3

School	Physicians Enrolled for Advanced Degrees	Graduate Students Enrolled for Degrees in the Basic Medical Sciences	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Enrolled in Refresher or Continuation Courses	Part Time or Special Medical Students Working Toward M.D. Degree	Totals
Duke University (North Carolina)...	0	10	0	6	106	0	122
University of North Carolina...	1	14	20	0	283	3	321
Bowman-Gray School of Medicine...	1	4	0	0	1	1	7
University of North Dakota...	0	1	0	0	0	0	1
Ohio State University...	0	0	0	0	46	0	46
University of Cincinnati...	21	17	0	0	190	0	228
Western Reserve University...	0	58	0	42	0	2	102
University of Oklahoma...	4	3	3	211	114	0	335
University of Oregon...	6	11	1	0	645	0	663
Hahnemann Medical College (Pennsylvania)...	0	1	0	0	0	0	1
Temple University...	1	0	0	53	55	0	109
University of Pennsylvania...	0	50	0	0	45	0	95
University of Pittsburgh...	0	0	0	100	0	1	101
Woman's Medical College...	0	0	1	0	0	0	1
Medical College of South Carolina...	0	0	0	10	275	0	285
University of South Dakota...	0	0	39	0	0	5	61
Meharry Medical College (Tennessee)...	0	3	1	1	15	3	23
University of Tennessee...	19	13	9	0	0	0	41
Vanderbilt University...	9	4	0	0	2	1	16
Baylor University (Texas)...	0	0	0	8	172	2	182
Southwestern Medical College...	0	0	2	20	32	1	55
University of Texas...	0	6	1	0	736	0	743
University of Utah...	10	31	53	6	43	2	145
University of Vermont...	1	0	8	33	6	0	48
Medical College of Virginia...	0	0	4	4	170	0	178
University of Virginia...	10	0	0	0	0	0	10
West Virginia University...	0	8	0	0	0	0	8
Marquette University (Wis.)...	48	4	10	46	0	5	113
University of Wisconsin...	0	3	62	5	159	6	235
Totals	513	1,090	478	2,338	13,187	105	18,011

School	Physicians Enrolled for Advanced Degrees	Graduate Students Enrolled for Degrees in the Basic Medical Sciences	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Enrolled in Refresher or Continuation Courses	Part Time or Special Medical Students Working Toward M.D. Degree	Totals
Laval University...	7	2	30	0	0	0	39
McGill University...	166	41	0	0	0	0	207
Queen's University...	15	0	30	5	0	0	50
University of Alberta...	0	0	0	8	105	0	203
University of Manitoba...	8	2	0	0	0	0	10
University of Montreal...	4	0	0	0	6	0	10
University of Saskatchewan...	0	2	0	0	0	0	2
University of Toronto...	35	15	0	60	59	0	169
University of Western Ontario...	22	6	0	27	0	2	57
Totals	237	68	60	100	260	2	747

refresher or continuation courses. Two Canadian schools reported a total enrolment of 260 students in courses of this type.

One hundred and five part time or special medical students were enrolled in thirty-three medical schools in the United States.

The figures for the various categories of students listed total 18,011 for the medical schools in the United States and 747 for the Canadian schools. It is probable that a few students were reported in more than one category. Even allowing for this possibility, the total

medical schools since 1918 has been two years of college training. In 1938 the Council recommended that at least three years of college training be required of all candidates for admission. With the exception of California the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college. Seventy-five of the eighty-seven schools in the United States and Canada require three or more years of premedical work. Five schools, Georgetown, Johns Hopkins, Tufts, Vanderbilt and

Laval, require a bachelor's degree. Georgetown, however, requires only 90 semester hours of college work from veterans.

Almost all medical schools are now urging that candidates for admission to medical school arrange their college courses so as to acquire as broad an educational background as possible. Traditionally premedical students have concentrated on courses in biology, chemistry and physics in the belief that such concentration will aid them in gaining admission to medical school or that it will enable them to do better work in medical school. For several years the medical schools have been trying without too great success to persuade premedical students that in passing on a candidate for admission they are primarily concerned with the quality of the work that he has done in the sciences and not the quantity. They have also sought to convince the premedical student that experience has shown that he will experience no undue difficulty in his medical school work if he has taken no more than the minimum number of scientific courses required for admission.

The medical schools recognize that, if the physician is to make his full potential contribution to society, he requires a broad cultural background and an understanding of the forces that shape the world in which he practices his profession. Medical schools are therefore urging students to include in their college programs courses in history, literature, sociology, economics, political science, psychology, philosophy and the fine arts.

The cooperation of the premedical advisers in the undergraduate colleges is needed in gaining acceptance of these suggestions. During the past year the Association of American Medical Colleges has prepared and circulated to the colleges a valuable guide for premedical advisers entitled "Handbook for Advisers to Students Planning to Enter Medicine." If this handbook receives the attention to which it is entitled, a general improvement in the pattern of premedical education in this country should result.

The 1948 Freshman Class

The medical schools and schools of the basic medical sciences in the United States estimate that they will enroll 6,407 freshman students during the academic year 1948-1949. By June of this year the schools had selected 5,907 students for admission. This group included 4,028 male veterans (68 per cent), 1,438 other men (25 per cent) and 441 women (7 per cent). Forty-nine of the women are veterans.

These preliminary figures suggest that there will be slightly fewer veterans in the 1948 freshman class than in the 1947 class. It seems likely that this latter class will mark the peak in the admission of veterans of World War II to medical schools. It would also appear that there will be somewhat fewer women than in the last four or five freshman classes.

Financial Support of Medical Schools

The budgets of the medical and basic science schools in the United States for the academic year 1948-1949 total approximately \$51,000,000. This sum represents an increase of \$8,000,000 or 18.6 per cent over the total budgets of the same schools for the year 1947-1948.

The figure \$51,000,000 does not include grants for research or special teaching projects from outside agencies or any significant portion of the cost of operating the teaching hospitals of the country. It does include a total of approximately \$2,900,000 that the medical schools will spend to support certain activities in their

affiliated hospitals. This sum is largely made up of salaries of professional and technical personnel on hospital staffs and the cost of operating special laboratories in affiliated hospitals and clinics. A small portion represents contributions to the operating budgets of hospitals and dispensaries used by the medical school for teaching purposes. It should be pointed out that part of the increase of \$8,000,000 in the budgets reported by the medical schools is accounted for by the fact that some schools included these various expenditures in their affiliated hospitals for the first time in reporting their budgets for 1948-1949.

This year all but fourteen schools supplied figures which included the cost of maintenance of the physical plant and all but four the cost of operating the library. Last year thirty-three schools did not report the cost of plant maintenance, and twenty-six did not include the budgets of their libraries.

Last year's figures included charges for general university administration for eighteen schools. Such a charge constitutes a real part of the cost of medical education, but since the majority of schools do not carry a charge for general university administration, the eighteen schools that do were asked to deduct it so that the figures obtained from each school might be more comparable. This year only three schools indicated that this charge was included in the budgetary figures that they reported. The net result of including

TABLE 19.—*Expenditures per Student by the Medical and Basic Science Schools in the United States, 1948-1949*
Excluding research funds from outside sources

	Number of Schools
\$ 735 to 999.....	5
1,000 to 1,499.....	11
1,500 to 1,999.....	22
".....	17
".....	10
2,000 to 2,999.....	7
3,000 to 4,999.....	3
Over 5,000.....	2
Total.....	77

the cost of plant maintenance and operation of the library and deducting the charge for general university administration was to increase the total budgets of the medical schools by \$1,000,000.

Not included in the \$51,000,000 that it will cost to operate the medical schools during the coming year are the direct and frequently substantial contributions that many teaching hospitals make to the educational programs of their affiliated schools. These contributions take the form of partial or full support of teaching personnel, research and student laboratories, and the furnishing of classroom space and other accommodations. Neither does the \$51,000,000 include the value of the services contributed by unpaid members of the teaching staffs. In many schools teachers who serve without pay are responsible for a major part of the instruction in the clinical departments.

The schools have estimated that during the academic year 1948-1949 they will receive from outside agencies a total of \$16,630,000 in grants for research and \$3,200,000 in grants for special teaching activities. Last year funds in these categories totaled \$15,400,000 and \$2,600,000 respectively.

The range of expenditures per student that the schools will make during 1948-1949 varies from \$735 to \$9,500. In table 19 the seventy-seven medical and basic science schools in the United States have been

arranged in eight groups according to their anticipated expenditures per student. Grants from outside agencies for teaching and research were excluded in these computations. A comparison of these figures with those for 1947-1948 reveals that for the coming academic year the number of schools spending less than \$1,500 per student has decreased from 34 to 16, and the number spending \$2,000 or more per student has increased from 29 to 39.

Receipts from tuition fees during the coming year will total only \$12,800,000, or 25 per cent of the budgets of the medical schools. In 1947-1948 tuition fees provided approximately \$12,000,000, or 28 per cent of the budgets of the medical schools. Last year it was reported that seventeen schools were unable to match student fees dollar for dollar with funds from non-student sources. The number of schools in this category for 1948-1949 has decreased to seven.

This review of the financial status of the medical schools indicates that the schools have experienced a definite measure of success in securing additional operating funds during the past year. The increase in funds has made it possible for most schools to maintain the quality of their educational programs even in the

TABLE 20.—*Fees in Medical and Basic Science Schools in the United States and Canada*

	1947-1948 Number of Schools	1948-1949 Number of Schools
Under \$99.....	1	1
\$100 to 199.....	5	2
200 to 299.....	14	11
300 to 399.....	15	15
400 to 499.....	10	12
500 to 599.....	18	12
600 to 699.....	22	23
700 to 799.....	4	8
800 or over.....	0	3
Total.....	87	87

presence of inflation. The schools owe much of their success in meeting the problems of inflation to the deep loyalty of their staffs, whose salaries in many cases have not kept pace with the rising cost of living. Only a few schools have indicated that some curtailment of established activities has been necessary for budgetary reasons.

The medical schools, however, are almost unanimous in declaring that if they are to continue to meet the problems of inflation successfully and if they are to undertake new developments important to their fundamental programs of undergraduate medical education, they will require additional operating funds in addition to those currently available. About four fifths of the schools were able to furnish estimates of their needs. On the basis of the figures submitted, it can be estimated that the additional funds needed by all the medical schools amount to about \$15,000,000 annually. This need for additional funds is not all of recent origin. At least one third of the schools have never received adequate financial support, and the correction of long standing deficiencies is one of the important uses for which additional funds are needed.

The medical schools were also asked to estimate the additional funds that they need for capital developments. Five schools indicated that they did not need additional funds. Seventeen schools were unable to furnish estimates. Fifty-five schools supplied estimates which totaled \$197,357,960.

Medical education in this country is at the highest point of its development that has yet been reached. Notable advances are still being made. Substantial improvements have been effected, particularly among a large group of the less wealthy schools, many of which have been able to double, triple, or even quadruple their budgets in the last ten years. However, the problems presented by inflation and the recognition that additional advances in our system of medical education could be made if more funds were available are causing those who are responsible for the conduct of medical education concern as to whether satisfactory progress can be maintained in the future. As a consequence, medical educators have been giving close and urgent study to possible methods by which the basic financial support of the medical schools can be increased. In some quarters it is felt that the solution lies in seeking direct federal subsidies on a large scale. This solution implies such a fundamental change in the philosophy of the support and control of medical education that there is a growing conviction that before such aid is sought, an intensive effort should be made to secure the needed funds from voluntary sources and local units of government. There is good evidence for the belief that the medical schools have not adequately presented their problem to the general public and that, if the public can be informed of the needs of the schools and the reasons for these needs, much more generous support of the medical schools will be forthcoming. The ultimate solution of the problem of adequate support of the medical schools is not yet apparent. It may be predicted that the problem will continue during the coming year to receive the serious and critical attention of all who are concerned with medical education.

Fees

The average tuition fee for an academic year charged by the medical schools in the United States increased only 21 per cent from 1940 to 1947. To help meet rising costs a number of schools found it necessary to raise tuition fees for 1947-1948. The average tuition fee for 1947-1948 was \$480, representing an increase of 4.5 per cent over 1946-1947 and an increase of 27 per cent over 1939-1940. Thirty-two schools have announced increases in tuition charges for the coming year. These increases will raise the average tuition fee for 1948-1949 to \$513, an increase of 7 per cent over the preceding year and an increase of 36 per cent over 1939-1940. While this is a substantial increase, it should be pointed out that it amounts to less than half of the general increase in the cost of living that has occurred during the same period. Attention should also be drawn to the fact brought out in the preceding section that tuition fees will provide only 25 per cent of the cost of operating the medical school during the forthcoming year, and that, despite the increases in tuition, this is a slightly smaller proportion of the total operating costs than was met by student fees in 1947-1948.

A number of medical schools are prepared to give assistance from scholarship and loan funds to individual students who will have difficulty in paying the increased tuition fees.

In table 20 the eighty-seven medical schools and schools of the basic medical sciences in the United States and Canada have been arranged in groups according to tuition fees charged resident students for the sessions 1947-1948 and 1948-1949. The figures are

based on the average tuition fee charged for the complete medical course and include minor charges such as those for matriculation, breakage, diploma and graduation. Thirty-two schools in the United States make an additional charge for nonresidents. These sums vary considerably in amount. The lowest is \$55 and the highest \$400.

Plans of Medical Students for Future Practice

Concern has been expressed in several quarters in recent years that few present day medical students are planning to enter general practice. The results of studies on this point made by certain of the medical schools are, therefore, of interest. Fifteen schools constituting a representative cross section of the medical schools of the country reported that during the past year they sought information from the students in one or more classes concerning their plans with respect to practice.

Polls of nine senior classes were conducted. In four the majority of students planned to enter general practice and in four to specialize. One class was almost evenly divided. The averages for the nine classes were: 48.9 per cent intended to specialize; 41.6 per cent to enter general practice; 9.5 per cent were undecided.

Four junior classes were polled. In two the majority were undecided. A majority of one class favored general practice. The fourth class was equally divided. The averages for the four classes were: 30 per cent intended to specialize; 32 per cent to enter general practice; 38 per cent were undecided.

Polls of five freshman and sophomore classes revealed that in all but one the majority of students were undecided. The averages for the five classes were: 18 per cent planned to specialize; 30 per cent to enter general practice; 52 per cent were undecided.

The overall averages for the eighteen classes included in the study were: 36 per cent planned the specialize; 36 per cent to enter general practice, and 28 per cent were undecided.

It is of interest to speculate whether all medical schools should be encouraged to conduct such polls annually. A knowledge of the trend of student interest should prove helpful to a school in advising its students. It would also assist the school in reappraising from time to time the influence that its educational program was having on its students in their choice of a career.

Clinical Clerkships

During the last fifteen years there has been a definite trend to scheduling clerkships on inpatient services in the third year of the medical school course. It has been felt that this arrangement is the most satisfactory for providing close supervision and guidance of the student at the time when he is just beginning his work with patients. After serving a well supervised inpatient clerkship, the student should be in a position to derive more benefit from work in the outpatient department, where in general he must work more independently of his instructors. Scheduling the clerkships in the third year also has the advantage of allowing more flexibility in planning the curriculum of the fourth year, since the student enters that year with his basic clinical instruction completed or nearly completed. He can then be given the opportunity to pursue advanced, elective or special courses which he would not have been prepared to take as a third year student and for

which there would not be time in the fourth year if the principal clerkships were all postponed to that year.

In 1948-1949 students will serve clerkships on inpatient services in general medicine during the third year in 57 of the 70 medical schools in this country. In 31 schools, the inpatient clerkship will be given only in the third year. In 26 schools it will extend over the third and fourth years.

In general surgery during 1948-1949, clerkships are scheduled for the third year in 48 schools. Twenty of these schools also provide work with inpatients during the fourth year.

Inpatient clerkships in pediatrics will be given in the third year in 47 schools. Fifteen of these schools also have inpatient clerkships in the fourth year.

The clerkship in obstetrics falls entirely in the third year in 20 schools, is limited to the fourth year in 31 schools and is given in both the third and fourth years in 19 schools.

R.O.T.C. Programs in Medical Schools

Forty-nine medical schools and schools of the basic medical sciences have established or are in the process of establishing R.O.T.C. programs. During 1947-1948 somewhat more than 5 per cent of the total student body in the United States was enrolled in these programs.

New Medical Schools

No new medical schools opened during the past year. The University of Washington School of Medicine in Seattle admitted its second freshman class in the fall of 1947. This school is planning to have its full four year program in operation by the fall of 1949 and to graduate its first class in 1950. The organization of the medical school of the University of California in Los Angeles is continuing. Faculty appointments are being made and a building program is being developed. The school has not yet announced the date on which it will open.

Among the two year schools, West Virginia during the past year has been giving active consideration to expanding to a four year program. North Carolina has received authorization from the legislature to expand and is proceeding with the construction of a teaching hospital which will probably be completed by 1951. The Board of Curators of the University of Missouri is studying plans whereby that school can establish a four year program. The other two year schools have no immediate plans for expansion, although two of them, Mississippi and North Dakota, are still actively studying the problem.

Interest in the possibility of establishing new schools of medicine continues to be displayed by various groups in different parts of the country. No definite plans for a new school, however, were announced during the past year.

Survey of Medical Education

In the last Educational Number it was announced that the Council on Medical Education and Hospitals and the Association of American Medical Colleges would undertake a comprehensive survey of medical education in this country. During the past year the two organizations appointed a committee to conduct the survey and prepare and publish a report. The chairman of the committee is President Alan Valentine of the University of Rochester. The other members are Drs. Arthur C. Bachmeyer, Herman G. Weiskotten, Joseph

C. Hinsey, Victor Johnson, Fred C. Zapffe ex officio and Donald G. Anderson ex officio.

The committee has been active during the past year in formulating plans for the survey and has made the following statement concerning the purpose and plan of the survey:

The objectives of the study shall be to evaluate the present programs and determine the future responsibilities of medical education in its broadest aspects for the purpose of:

1. Improving medical education to better meet the over-all needs of the American people for
 - (a) The prevention of disease
 - (b) The restoration, so far as possible, to health of all those who suffer illness or injury, and
 - (c) The maintenance of the best standards of physical and mental health of all the people.

INTERNSHIPS AND RESIDENCIES

The following internships and residency training programs have been approved since the publication of the list of Approved Residencies and Fellowships in THE JOURNAL, May 1, 1948. Those designated with an asterisk (*) have been granted temporary approval in accordance with the plan announced in THE JOURNAL, April 20, 1946, page 1088. Many of the residencies recognized on a temporary basis have been inspected

2. Assessing the degree to which medical schools are meeting the needs of the country for physicians.
 3. Promoting the advancement of knowledge in the field of medical science, and
 4. Better informing the public concerning the nature, content and purposes of medical education.
- The study should encompass the following:
1. An inventory of the existing situation.
 2. Determination of the need for changes and improvements.
 3. Conclusions and recommendations based on the foregoing.
 4. Proposals for ways and means of carrying out the recommendations.

The survey will be initiated during the coming academic year. It is anticipated that it will require three years to complete.

by members of the Council's staff and are now under consideration for transfer to the regularly approved list. Several hospitals not included in the following list have also been surveyed by representatives of the Council and have been recommended for residency approval. These hospitals will be notified as soon as final action on their applications has been completed by the Council and the respective specialty boards.

ADDITIONAL RESIDENCIES APPROVED

Allergy

*Jewish Hospital Brooklyn

Anesthesiology

*Letterman General Hospital..... San Francisco
 *Oliver General Hospital..... Augusta, Ga.
 *Brooke General Hospital..... San Antonio, Texas
 *U. S. Marine Hospital..... Stapleton, S. I., N. Y.
 *U. S. Naval Hospital..... Bethesda, Md.
 *U. S. Naval Hospital..... Chelsea, Mass.
 *Veterans Admin. Hospital..... New Orleans
 *Veterans Admin. Hospital..... Staten Island, N. Y.
 *Veterans Admin. Hospital..... White River Jet., Va.

*Colorado General Hospital..... Denver
 *Denver General Hospital..... Denver
 *Bridgeport Hospital..... Bridgeport, Conn.
 *Grace Unit, Grace-New Haven Community Hospital..... New Haven, Conn.
 *Hospital of St. Raphael..... New Haven, Conn.
 *Children's Hospital..... Washington, D. C.
 *Garfield Memorial Hospital..... Washington, D. C.
 *Georgetown University Hospital..... Washington, D. C.
 *Riverside Hospital..... Jacksonville, Fla.
 *Cook County Hospital..... Chicago
 *Presbyterian Hospital..... Chicago
 *Indiana University Medical Center..... Indianapolis
 *St. Joseph Hospital..... Lexington, Ky.
 *Ochsner Foundation Hospital..... New Orleans
 *University Hospital..... Baltimore
 *Memorial Hospital..... Worcester, Mass.
 *St. Vincent's Hospital..... Worcester, Mass.
 *Mary Hitchcock Memorial Hospital..... Hanover, N. H.
 *Elliot Hospital..... Manchester, N. H.
 *Millard Fillmore Hospital..... Buffalo
 *Mary Immaculate Hospital..... Jamaica, N. Y.
 *Lenox Hill Hospital..... New York City
 *St. Clare's Hospital..... New York City
 *St. Mary's Hospital..... Rochester, N. Y.
 *Mercy Hospital..... Canton, Ohio
 *Maumee Valley Hospital..... Toledo, Ohio
 *Youngstown Hospital..... Youngstown, Ohio
 *Mercy Hospital..... Pittsburgh
 *Montefiore Hospital..... Pittsburgh
 *Robert Packer Hospital..... Sayre, Pa.
 *Harris Memorial Methodist Hospital..... Fort Worth, Texas
 *Medical College of Virginia, Hospital Division..... Richmond, Va.
 *Milwaukee County Hospital..... Milwaukee

Cardiovascular Disease

*U. S. Naval Hospital..... Bethesda, Md.

Dermatology and Syphilology

*Letterman General Hospital..... San Francisco
 *Army Institute of Pathology..... Washington, D. C.
 *Employees' Hospital of the Tennessee Coal, Iron and Railroad Company..... Fairfield, Ala.

Gastroenterology

*Hospital of the University of Pennsylvania.. Philadelphia

Internal Medicine

U. S. Marine Hospital..... New Orleans
 Veterans Admin. Hospital..... Coral Gables, Fla.
 *Veterans Admin. Hospital..... Albuquerque, N. M.
 Cambridge City Hospital..... Cambridge, Mass.
 *Springfield Hospital..... Springfield, Mass.
 *Asbury Hospital..... Minneapolis
 St. Joseph's Hospital..... St. Paul
 St. Luke's Hospital..... Kansas City, Mo.
 *Englewood Hospital..... Englewood, N. J.
 St. Mary's Hospital..... Brooklyn
 Emergency Hospital of the Sisters of Charity..... Buffalo
 *Cornell University Infirmary..... Ithaca, N. Y.
 *Mercy Hospital..... Toledo, Ohio
 *Bradford Hospital..... Bradford, Pa.
 *Harrisburg Polyclinic Hospital..... Harrisburg, Pa.
 Columbia Hospital..... Columbia, S. C.
 Greenville General Hospital..... Greenville, S. C.
 *St. Joseph Hospital..... Memphis, Tenn.
 *Holy Cross Hospital..... Salt Lake City
 St. Mary's Hospital..... Madison, Wis.

Neurological Surgery

Veterans Admin. Hospital..... Van Nuys, Calif.
 Veterans Admin. Hospital..... Washington, D. C.
 *Veterans Admin. Hospital..... Memphis, Tenn.
 Duke Hospital..... Durham, N. C.
 *Mercy Hospital..... Pittsburgh

Neurology

*Fitzsimmons General Hospital..... Denver
 *Freedmen's Hospital..... Washington, D. C.
 *Veterans Admin. Hospital..... Los Angeles
 *Veterans Admin. Hospital..... Coatesville, Pa.
 *Ochsner Foundation Hospital..... New Orleans
 *St. Louis City Hospital..... St. Louis
 *Graduate Hospital of the University of Pennsylvania..... Philadelphia

Obstetrics-Gynecology

*Herick Memorial Hospital (ObG)..... Berkeley, Calif.
 *St. Vincent's Hospital (ObG)..... Indianapolis
 Swedish Hospital (Ob)..... Minneapolis
 *Unity Hospital (ObG)..... Brooklyn
 Ellis Hospital (Ob)..... Schenectady, N. Y.
 Columbia Hospital (ObG)..... Columbia, S. C.
 Methodist Hospital (ObG)..... Dallas, Texas
 Arlington Hospital (Ob)..... Arlington, Va.

Ophthalmology

Veterans Admin. Hospital..... Wadsworth, Kan.
 *Veterans Admin. Hospital..... Oklahoma City
 *New Haven Unit, Grace-New Haven Community Hospital..... New Haven, Conn.
 Beth Israel Hospital..... New York City
 *Cleveland Clinic Hospital..... Cleveland

Orthopedic Surgery

White Memorial Hospital.....	Los Angeles
Illinois Masonic Hospital.....	Chicago
Reading Hospital.....	Reading, Pa.
Columbia Hospital.....	Columbia, S. C.
Greenville General Hospital.....	Greenville, S. C.
Salt Lake General Hospital (in affiliation with Veterans Admin. Hospital and Shriners Hospital for Crippled Children).....	Salt Lake City

Otolaryngology

Veterans Admin. Hospital.....	McKluney, Texas
*New York Hospital.....	New York City

Pathology

U. S. Marine Hospital.....	Seattle
Veterans Admin. Hospital.....	Chamblee, Ga.
Veterans Admin. Hospital.....	Framlingham, Mass.
Veterans Admin. Hospital.....	Minneapolis
Veterans Admin. Hospital.....	Jefferson Barracks, Mo.
Veterans Admin. Hospital.....	Nashville, Tenn.
Veterans Admin. Hospital.....	Dallas, Texas
Veterans Admin. Hospital.....	McKluney, Texas
Veterans Admin. Hospital.....	Salt Lake City

Glendale Sanitarium and Hospital.....	Glendale, Calif.
Stamford Hospital.....	Stamford, Conn.
Waterbury Hospital.....	Waterbury, Conn.
Eastern Maine General Hospital.....	Bangor, Maine
Lawrence General Hospital.....	Lawrence, Mass.
Menorah Hospital.....	Kansas City, Mo.
Mountainside Hospital.....	Montclair, N. J.
Burlington County Hospital.....	Mount Holly, N. J.
Hospital of St. Barnabas and for Women and Children.....	Newark, N. J.
Mercer Hospital.....	Trenton, N. J.
Charles S. Wilson Memorial Hospital.....	Johnson City, N. Y.
St. John's Long Island City Hospital.....	Long Island City, N. Y.
Huron Road Hospital.....	East Cleveland, Ohio
Providence Hospital.....	Portland, Ore.
Hennet Hospital.....	Erle, Pa.
Methodist Hospital.....	Memphis, Tenn.
Dr. W. H. Groves Latter-Day Saints Hospital.....	Salt Lake City
Holy Cross Hospital.....	Salt Lake City
De Paul Hospital.....	Norfolk, Va.
University Hospital.....	San Juan, P. R.

Pediatrics

*Brooke General Hospital.....	San Antonio, Texas
*University Hospital.....	Little Rock, Ark.
*Mary Imogene Bassett Hospital.....	Cooperstown, N. Y.

Physical Medicine

*Veterans Admin. Hospital.....	Fort Logan, Colo.
*Veterans Admin. Hospital.....	Cleveland
*Rehabilitation Hospital.....	West Haverstraw, N. Y.

Proctology

*Temple University Hospital.....	Philadelphia
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Psychiatry

*Fitzsimmons General Hospital.....	Denver
*Veterans Admin. Hospital.....	Gulfport, Miss.
*Veterans Admin. Hospital.....	Jefferson Barracks, Mo.
*Veterans Admin. Hospital.....	Tomah, Wis.

*Pasadena Sanitarium.....	South Pasadena, Calif.
*Pacific Colony.....	Spadra, Calif.
*George Washington University Hospital.....	Washington, D. C.
*Anna State Hospital.....	Anna, Ill.
*Dixon State Hospital.....	Dixon, Ill.
*Ochsner Foundation Hospital.....	New Orleans
*St. Joseph's Retreat.....	Dearborn, Mich.
*Ionla State Hospital.....	Ionla, Mich.
*Newberry State Hospital.....	Newberry, Mich.
*Long Island Home.....	Amityville, N. Y.
*Vanderbilt University Hospital.....	Nashville, Tenn.

Pulmonary Diseases

*Veterans Admin. Hospital.....	Fort Logan, Colo.
*Veterans Admin. Hospital.....	Staten Island, N. Y.

*Tulare-Kings Counties Joint Tuberculosis Hospital.....	Springville, Calif.
*Bergen Pines, Bergen County Hospital.....	Ridgewood, N. J.
*North Carolina Sanatorium for the Treatment of Tuberculosis.....	McCaig, N. C.
*Mahoning Tuberculosis Sanatorium.....	Youngstown, Ohio

Radiology

*Children's Hospital (Rad.).....	San Francisco
*St. Luke's Hospital (Rad.).....	Duluth, Minn.
*Evangelical Deaconess Hospital (D.R.).....	Milwaukee

Urology

*Fitzsimmons General Hospital.....	Denver
*Oliver General Hospital.....	Augusta, Ga.
*U. S. Marine Hospital.....	Stapleton, S. I., N. Y.
*Veterans Admin. Hospital.....	Oakland, Calif.
*Veterans Admin. Hospital.....	Newington, Conn.
*Veterans Admin. Hospital.....	Wadsworth, Kan.
*Veterans Admin. Hospital.....	Minneapolis
*Veterans Admin. Hospital.....	Albuquerque, N. M.
*Veterans Admin. Hospital.....	Lincoln, Neb.

*Norwood Hospital.....	Birmingham, Ala.
*San Diego County General Hospital.....	San Diego, Calif.
*Harbor General Hospital.....	Torrance, Calif.
*Duval County Hospital.....	Jacksonville, Fla.
*Provident Hospital.....	Chicago
*Louisville General Hospital.....	Louisville, Ky.
*Shreveport Charity Hospital.....	Shreveport, La.
*Mount Auburn Hospital.....	Cambridge, Mass.
*Missouri Baptist Hospital.....	St. Louis
*Orange Memorial Hospital.....	Orange, N. J.
*Jewish Hospital.....	Brooklyn
*Methodist Hospital.....	Brooklyn
*Hillcrest Memorial Hospital.....	Tulsa, Okla.

* Indicates temporary approval.

ADDITIONAL INTERNSHIPS APPROVED

Tripler Gener	
U. S. Naval	
St. Mary's II	
St. Vincent's Hospital.....	Los Angeles
Harbor General Hospital.....	Torrance, Calif.
Mercy	
Baptist	
Peninsu	
Brookc	
Abbott	

Lutheran Deaconess Home & Hosp., Minneapolis	
Mississippi Baptist Hospital.....	Jackson, Miss.
Mercy Hosp.-Street Memorial.....	Vicksburg, Miss.
Overlook Hospital.....	Summit, N. J.
St. Francis Hospital.....	Poughkeepsie, N. Y.
St. Joseph's Hospital.....	Syracuse, N. Y.
De Paul Hospital.....	St. Louis, Mo.
Grand Forks Deaconess Hosp.	Grand Forks, N. D.
Bethesda Hospital.....	Cincinnati, Ohio
Flower Hospital.....	Toledo, Ohio

Riverside Hospital.....	Toledo, Ohio
St. Vincent's Hospital.....	Portland
Doctors Hospital.....	Philadelphia
Sacred Heart Hospital.....	Yankton, S. D.
Fort Sanders Hospital.....	Knoxville
St. Josep	
Arlington	
Bluefield	
St. Josep	
San Juan	

POSTGRADUATE AND CONTINUATION COURSES FOR PHYSICIANS

Since 1937 the Council on Medical Education and Hospitals has published periodically in THE JOURNAL lists of postgraduate continuation courses offered by educational institutions throughout the country. These listings include courses of a review and refresher nature as well as formal basic science courses in preparation for specialty board certification. The courses are for variable periods from a few days to a year or longer. Some are concentrated full time courses and others are part time. In the June 19, 1948 issue of THE JOURNAL more than 850 courses covering the period from July 1, 1948 to Jan. 15, 1949 are listed. Interest in postgraduate courses is at an all time peak and appears still to be increasing. During the year July 1, 1947 to June 30, 1948 a total of 1,800 courses were offered. This represented an increase of 437 over the preceding annual period. State medical societies, medical schools,

hospitals, state and city boards of health and special societies continue to be active in providing leadership in developing this increasingly popular undertaking in medical education. Institutions offering this type of training are invited to announce such courses in the semiannual lists compiled by the Council.

With the exception of the formal basic science courses, these continuation or review courses are not designed to prepare physicians for certification in the specialties by the American boards. Some opportunities are offered, however, for review work in preparation for the examinations of the specialty boards. Many are applicable to the educational benefits provided physician veterans.

In the following paragraphs mention is made of some of the recent and noteworthy developments in post-

graduate education. An analysis of the courses offered during the period July 1, 1947 to July 1, 1948 is also presented.

Recent Developments

Cancer symposiums extending over several days are being sponsored in the metropolitan and nonmetropolitan areas of California by the county medical societies, the Cancer Commission of the California Medical Association, the State Department of Public Health and the California Division of the American Cancer Society.

The Section of Maternal and Child Health of the Louisiana State Department of Health has developed refresher courses in obstetrics and pediatrics in cooperation with the medical schools in New Orleans. The courses covered two weeks, each course being limited to twenty physicians. Tuition, transportation and expenses were paid by the State Health Department.

Postgraduate courses in pediatrics of two weeks' duration, designed primarily for physicians in general practice, are offered every month to physicians in Michigan without charge through the cooperation of the Michigan Department of Health, the Michigan State Medical Society and the departments of pediatrics and postgraduate medicine of the University of Michigan.

Postgraduate instruction throughout the state of New York is arranged by the Council Committee on Public Health and Education of the Medical Society of the State of New York with the cooperation of the New York State Department of Health.

will be given in November at the College of Medical Evangelists under the auspices of the Los Angeles Urological Society.

Analysis of Courses Offered in 1947-1948

In presenting this analysis of postgraduate courses which have been offered during the annual period July 1, 1947 to June 30, 1948 the statistical summaries are divided into three groups. Short review courses of five days or less are discussed, followed by courses of more than five days' duration and, lastly, a group including clinical conferences, graduate assemblies, study courses and courses of a chautauqua nature.

Short Review Courses.—Thirty-one states and the District of Columbia provided opportunities of five days' duration or less for physicians to continue professional study in or near their home communities. There were 496 courses given in these states as follows:

Alabama.....	2	Minnesota.....	5
Arizona.....	1	Missouri.....	9
California.....	47	New York.....	105
Colorado.....	6	North Carolina.....	6
Connecticut.....	11	North Dakota.....	2
District of Columbia.....	3	Ohio.....	10
Florida.....	2	Oklahoma.....	36
Georgia.....	2	Oregon.....	1
Illinois.....	18	Pennsylvania.....	75
Indiana.....	13	South Carolina.....	2
Iowa.....	13	Tennessee.....	10
Kansas.....	22	Texas.....	11
Kentucky.....	6	Vermont.....	3
Louisiana.....	6	Virginia.....	4
Massachusetts.....	9	Washington.....	1
Michigan.....	25	Wisconsin.....	20
Total.....			496

TABLE 21.—Courses Offered and Attendance

	1945-1946			1946-1947			1947-1948		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
Short review courses (5 days or less).....	154	128	4,140	239	205	16,274	496	478	31,569
Courses of less than a year and more than 5 days.....	1,070	1,043	19,991	1,201	1,137	23,062	1,379	1,183	24,878
Clinical conferences, graduate assemblies, study and chautauqua courses.....	52	52	21,824	21	21	20,475	25	25	26,356
Totals.....	1,276	1,223	45,955	1,551	1,363	59,811	1,900	1,686	82,803

A series of educational exercises consisting of clinics and pathologic conferences at hospitals throughout the state are regularly scheduled by the Rhode Island Medical Society. All members of the society are privileged to attend.

A course in physical medicine and rehabilitation was conducted by the University of Texas Medical Branch. The course was designed for the general practitioner and specialist interested in the more effective use of physical medicine and included a roster of twenty recognized authorities as guest speakers. Instruction was provided in the theory and technic of application of the various physical agents, as well as demonstrations and motion pictures.

The American Academy of Ophthalmology and Otolaryngology conducts home study courses for graduates in medicine who are practicing or are preparing to take up the practice of these specialties.

The American Urological Association is establishing courses of graduate instruction in urology. These courses are to be given in eight or ten areas in various parts of the country and will cover a series of daily lectures over a period of a week. Emphasis will be placed on the basic sciences and their application to the problems of urology. The first course arranged

The subjects of these 496 courses included:

Allergy	Malignant diseases
Anatomy	Medicine, general
Anesthesiology	Neurology and psychiatry
Arthritis	Obstetrics and gynecology
Bacteriology	Ophthalmology
Basic sciences	Orthopedic surgery
Biochemistry	Otolaryngology
Cardiovascular disease	Otology
Chest diseases	Otorhinolaryngology
Dermatology and syphilology	Pathology
Diabetes	Pediatrics
Electrocardiography	Physical medicine
Electroencephalography	Physiology
Endocrinology	Poliomyelitis
Endoscopy	Proctology
Fractures	Public health
Gastroenterology	Radiology
Genetics and anthropology	Surgery, general
Hematology	Therapy
Industrial health	Urology
Internal medicine	Venerical disease

The courses varied in length from sessions of one-half hour to five days' full time and consisted of organized courses, daily set clinics on patients in the wards and evening lectures with emphasis on recent developments. Of the 496 courses reported, 125 covered five days' full time, 65 were four day courses, 59 were three day courses, 49 two days and 43 one full day. In 60 instances the length of the course was variable. The remainder of the courses were reported by lectures, sessions or hours. The type of instruction was didactic,

clinical or both. The instructors were chosen from physicians practicing in the state in which the courses were offered as well as from out of the state. Medical school faculty members participated in 178 of the courses. The facilities used included hospitals, clinics, medical schools and hotels.

These offerings were held in every month, the majority being given in January, March, September and October. Thirty-two were offered continuously throughout the year, while 52 were arranged at the convenience of the applicant. Fifty-five were available for specialists only. Fees ranged from \$3 to \$300. The majority were less than \$50. For 84 courses no fee was charged.

The attendance reported for 478 courses was 31,569. For 18 courses no enrolment figures were compiled.

This type of instruction is in great demand, as evidenced by the fact that the attendance almost doubled the reported attendance last year.

Courses of More than Five Days.—In centers where ample clinical facilities are available, 1,279 graduate courses of more than five days' duration were offered in thirty-four states and the District of Columbia during 1947-1948. These states and the number of courses which were given in each state are as follows:

Arkansas.....	3	Mississippi.....	2
California.....	64	Missouri.....	6
Colorado.....	6	Nebraska.....	3
Connecticut.....	19	New Jersey.....	2
District of Columbia.....	47	New York.....	513
Florida.....	2	North Carolina.....	1
Georgia.....	10	Ohio.....	4
Illinois.....	191	Oklahoma.....	8
Indiana.....	3	Oregon.....	19
Iowa.....	12	Pennsylvania.....	61
Kansas.....	6	South Carolina.....	2
Kentucky.....	3	Tennessee.....	3
Louisiana.....	16	Texas.....	16
.....	6	Vermont.....	4
.....	116	Virginia.....	7
Michigan.....	26	Washington.....	12
Minnesota.....	11	Wisconsin.....	12
Total.....			1,279

These courses consisting of refresher courses of more than five days to intensive courses extending over one year were offered in the following subjects:

Allergy	Medicine, general
Anatomy	Neurology and psychiatry
Anesthesiology	Nutrition
Arthritis	Obstetrics and gynecology
Bacteriology	Ophthalmology
Basic sciences	Orthopedic surgery
Biochemistry	Otolaryngology
Cardiovascular disease	Otorhinolaryngology
Chemistry	Otology
Chest diseases	Pathology
Dermatology and syphilology	Pediatrics
Diabetes	Pharmacology
Electrocardiography	Physical medicine
Electroencephalography	Physiological chemistry
Endocrinology	Physiology
Endoscopy	Poliomyelitis
Fractures	Proctology
Gastroenterology	Public health
Hematology	Radiology
Industrial health	Surgery, general
Internal medicine	Therapy
Legal medicine	Urology
Malignant diseases	Veneral disease

The length of the full time courses varied from six days to one month for 425 courses. There were offered 234 courses ranging in length from one to four months and 224 from five to twelve months. There were 16 one year courses and 2 each given for two and three years. The remainder (376) specified the length of the course in hours, sessions, seminars, semesters or quarters.

The description of these intensive courses indicated that instruction was both clinical and didactic. Instruction was both didactic and clinical for 604 courses, didactic only for 81 and clinical only for 86. The remainder did not specify the type of instruction.

In presenting these courses, hospital facilities were used for 744 courses, medical schools for 571 courses and clinics for 425. In many instances two or all three of these sources were used in presenting an individual course. Hotel and other facilities were used for 89 courses.

The faculties of medical schools served as instructors in 472 courses. Additional instructors were specialists in their field, chosen mainly (in 558 instances) from physicians residing within the state in which the course was given, but included also physicians from outside the state.

Courses were offered during every month, and in 44 instances they were arranged to suit the convenience of physician-students. There were 95 courses given for specialists only. Fees varied from \$1 to \$1,000. For 43 courses no fee was charged.

The attendance reported for 1,183 of the 1,279 courses given in 1947-1948 was 24,878.

Sponsoring and Contributing Agencies.—One hundred and ninety-four agencies participated in the sponsoring of both the short review courses and the longer courses. These included 59 medical schools, 43 special societies, 29 hospitals, 22 state societies, 10 graduate schools of medicine, 14 county societies, 13 state health departments, 3 universities and the United States Public Health Service.

Seventeen agencies, while not responsible for the development of these opportunities, were reported as contributing agencies. These included the W. K. Kellogg Foundation, the Commonwealth Fund, Veterans Administration, Rockefeller Foundation and the National Foundation for Infantile Paralysis.

Clinical Conferences, Graduate Assemblies, Study Courses and Chautauqua Courses.—In fifteen states, there were twenty-five such opportunities offered. This type of training varied in length from one day sessions to two weeks for conferences, assemblies and study courses. In eight states, chautauqua courses were held at various times throughout the states in from four to twelve centers. Contributing agencies were speakers' bureaus, medical schools, state and county medical societies, state health departments and special societies. The majority surveyed topics in general medicine and surgery. Other subjects covered were pediatrics, ophthalmology and otolaryngology, psychosomatic medicine, obstetrics and gynecology. Instruction was both didactic and clinical. The facilities of hospitals, clinics and medical schools were used. For this type of instruction no fee was charged or a small registration fee. The attendance numbered 26,356.

Summary.—In thirty-five states and the District of Columbia some form of continuation study for practicing physicians was provided during 1947-1948. Table 21 summarizes the recorded enrolment for the year with comparative figures for two preceding years. The total for last year (82,803) represents the greatest number to seek such training in a given year. It exceeded the attendance during 1946-1947 by 22,992 and that of the year 1945-1946 by 36,848.

The offering of such opportunities to an increasing extent, as presented by these figures, indicates an extensive expansion and use of facilities of medical schools and hospitals. It represents also the desires of almost half of the entire physician population to improve their knowledge of newer technics of practice in a single year. Great credit is due all who participate in this remarkable program to improve the care of the people of our country.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 assumed title to Jefferson Hospital and Hillman Hospital, Birmingham. The Medical College of Alabama cares for all indigent patients of the county and city, maintenance of which is paid to the university on a per diem basis by the county. In 1943 appropriation included one million dollars for the building of a new medical school which will be erected as early as possible, and temporary quarters are now in the Jefferson-Hillman Hospital. First instruction in the Medical College of Alabama started June 4, 1945, with a junior class and this class was graduated in October, 1946. On October 8, 1945, the School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty, was absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. Tuition is as follows: for legal residents of Alabama \$400 per academic year plus incidental fees of \$20. Non-residents of the state are charged an additional \$100 each session. The registration for the 1947-1948 session was 132. No senior class was in session. The last session began Oct. 6, 1947 and ended June 12, 1948. The next session for all four classes will start Sept. 13, 1948, and will end June 7, 1949. The Dean is Roy R. Kracke, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$380 a year; nonresidents are charged \$505 a year. The registration for the 1947-1948 session was 274; graduates 55. The last session began Sept. 21, 1947, and ended June 18, 1948. The next session will begin Sept. 27, 1948, and will end June 17, 1949. The Dean is Joseph T. Roberts, M.D.

CALIFORNIA

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Medical Center, San Francisco 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of sixteen weeks each. The fees are \$320 per academic year. Nonresidents are charged \$250 additional each year. The registration for the 1947-1948 session was 283; graduates 63. The last session began Sept. 22, 1947 and ended June 17, 1948. The next class will begin Sept. 13, 1948 and will end June 16, 1949. The Dean is Francis Scott Smyth, M.D., San Francisco.

Loma Linda-Los Angeles

College of Medical Evangelists, Loma Linda; Boyle and Michigan Avenues, Los Angeles 33.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The freshman, sophomore and junior years consist of nine month academic sessions and the senior year will have in addition to the nine month session a seven weeks' clinical clerkship during the summer between the junior and senior years. A twelve month internship in an approved hospital is required. The yearly tuitions including fees are respectively, \$730, \$719, \$737 and \$745. The registration for 1947-1948 was 319; graduates 87. The last session for freshman, sophomore and junior students began on Sept. 21, 1947 and ended June 30, June 30 and June 11, 1948, respectively. The senior session began June 22, 1947 and was completed June 13, 1948. The next session for freshman and sophomore students will begin Sept. 12, 1948, junior students Sept. 19, 1948 and senior students June 13, 1948 and will end June 16, June 23, June 10, and June 12, 1949 respectively for the four classes. The president is George T. Harding, M.D., Los Angeles. The deans are Harold Shryock, M.D., Loma Linda, and W. F. Norwood, Ph.D., Los Angeles.

Los Angeles

University of Southern California School of Medicine, 3551 University Avenue, Zone 7.—Organized in 1895 as the 'University' of Southern California College of Medicine. First class graduated in 1888. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are approximately 90 semester hours. An internship is required for graduation. Coeducational since organization. Annual fees amount to approximately \$600. The registration for 1947-1948 was 251; graduates 58. The last session began Sept. 15, 1947 and ended June 12, 1948. The next session will begin Sept. 13, 1948 and will end June 11, 1949. The Dean is Burrell O. Raulston, M.D.

Stanford University-San Francisco

Stanford University School of Medicine, University Campus, Stanford University; 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is \$699. The registration for 1947-1948 was 242; graduates 57. The last session for all classes began Sept. 29, 1947 and ended June 9, 1948. The next session will begin Sept. 27, 1948 and will end June 15, 1949. The Dean is Loren R. Chandler, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are ninety semester hours of collegiate work. The fees average \$150 per academic year. Nonresidents are charged \$225 additional each year. The registration for 1947-1948 was 233; graduates 62. The last session began Sept. 29, 1947 and ended June 14, 1948. The next session will begin Sept. 27, 1948 and will end June 13, 1949. The Dean is Ward Darley, M.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1881, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The requirements for admission are three years collegiate work. The fees average \$750 per academic year. The registration for 1947-1948 was 222; graduates 55. The last session began Sept. 22, 1947 and ended June 16, 1948. The next session will commence Sept. 22, 1948 and will end June 16, 1949. The Dean is C. N. H. Long, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3800 Reservoir Road, N. W., Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of non-veterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average \$635 per academic year. Registration for 1947-1948 was 369, graduates 75. The last session for freshmen and sophomores began Sept. 22, 1947 and ended May 29, 1948; the junior class began Sept. 22, 1947 and ended May 21, 1948 and the senior class began Sept. 22, 1947 and ended June 14, 1948. The next session for freshmen and sophomores will begin Sept. 20, 1948 and will end May 28, 1949, the juniors will be in session from Aug. 30, 1948 to May 28, 1949; the senior session began June 1, 1948 and will end June 13, 1949. The Dean is Rev. Paul A. McNally, S.J., Ph.D.

George Washington University School of Medicine, 1335 H Street, N. W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it

absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1881. Ninety semester hours of college work are required for admission. The fees average \$600 per academic year. The registration for 1947-1948 was 315; graduates 80. The last session began Sept. 15, 1947 and ended May 26, 1948. The next session will begin Sept. 20, 1948 and will end June 1, 1949. The Dean is Walter A. Bloodorn, M.D.

Howard University College of Medicine, Fifth and W Streets, N. W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees are, respectively, \$352.50; \$317.50; \$337.50; \$337.50. The registration for 1947-1948 was 271; graduates 64. The last session began Sept. 27, 1947 and ended June 1, 1948. The next session will begin Sept. 25, 1948 and will end June 3, 1949. The Dean is Joseph L. Johnson, M.D.

GEORGIA

Augusta

University of Georgia School of Medicine, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1929. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of collegiate work are required for admission. The fees average \$225 per academic year for residents of Georgia, nonresidents \$325. Only bona fide residents of Georgia admitted (with exception of A.S.T. and V-12 Program students during World War II). The registration for the 1947-1948 session was 290; graduates 66. The 1947-1948 session for the senior class began April 3, 1947 and ended March 22, 1948; the freshman, sophomore and junior classes began September 11, 1947 and ended June 19, 1948. The next session will begin Sept. 9, 1948 and will end June 20, 1949. The Dean is G. Lombard Kelly, M.D.

Emory University

Emory University School of Medicine.—Organized in 1851 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), resuming the name of Atlanta Medical College. Became the School of Medicine of Emory University in 1915. Three years of collegiate work are required for admission. The course of study is four academic years; 34 weeks each in the 1st and 2nd years; 36 weeks in the 3rd year; 40 weeks in the 4th year. The fees for each of the four academic years are \$600. The registration for 1947-1948 was 210; graduates 48. The last session for freshmen and sophomores began Sept. 18 and 22, 1947 and ended June 5, 1948; the last session for juniors began Sept. 2, 1947 and ended June 5, 1948; the last session for seniors began Aug. 1, 1947 and ended June 5, 1948. The next session for freshmen and sophomores will begin Sept. 23 and 27, 1948 and will end June 4, 1949; the next session for the junior class will begin Sept. 7, 1948 and will end June 4, 1949; the senior session began Aug. 2, 1948 and will end June 4, 1949. The Dean is R. Hugh Wood, M.D.

ILLINOIS

Chicago

Northwestern University Medical School, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is 85 semester hours of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. A hospital internship is required for graduation. The total fees are \$600 each year. The registration for 1947-1948 was 520; graduates 143. The last session began Sept. 26, 1947 and ended June 12, 1948. The next session will begin Sept. 24, 1948 and will end June 11, 1949. The Dean is J. Roscoe Miller, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue.—Organized in 1915 by acquisition of Bennett Medical College which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The fees for the academic year beginning Sept. 27, 1948 will be \$675. The registration for 1947-1948 was 277; graduates 67. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 26, 1948;

the session for seniors began April 8, 1947 and ended March 23, 1948. The next session for freshmen, sophomores and juniors will begin Sept. 27, 1948 and will end June 25, 1949. The next session for seniors will begin Sept. 13, 1948 and will end June 4, 1949. The Dean is James J. Smith, M.D.

University of Chicago, The School of Medicine, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Ordan Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. The requirements for admission are 90 semester hours of collegiate work. The B.S. degree may be obtained during the second year. The curriculum covers twelve quarters of work. Seventy-two students are admitted to the first year class each year. The tuition fee averages \$690. The registration for 1947-1948 was 232; graduates, 51. Quarters begin in March, June, September and December of each year. All correspondence relating to general policies should be addressed to A. C. Bachmeyer, M.D., Associate Dean of the Biology Division, and that pertaining to student affairs to F. J. Mullin, Ph.D., Dean of Students.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average \$292 per academic year; nonresidents pay an additional fee of \$150. The registration for the 1947-1948 session was 634; graduates, 147. The last session began Sept. 29, 1947 and ended June 17, 1948. The next session will begin Sept. 27, 1948 and will end June 17, 1949. The Dean is John B. Youmans, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The B.S. degree in anatomy and physiology is conferred. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is \$221 for residents of Indiana and \$426 for nonresidents. The registration for the 1947-1948 session was 396; graduates 84. The last session began Sept. 22, 1947 and ended June 10, 1948. The next session will begin Sept. 20, 1948 and will end June 12, 1949. The Dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is \$230 each year for residents of Iowa and \$490 for nonresidents. The registration for 1947-1948 was 278; graduates 57. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 5, 1948; the last session for seniors began March 24, 1947 and ended March 13, 1948. The next session will begin Sept. 23, 1948 and will end on June 10, 1949. The Dean is Mayo Hamilton Soley, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th Street and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-

Chirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. The clinical courses are given in Kansas City. At present the first year and one-half of the medical course is given on the University campus at Lawrence, Kansas. The class is transferred to the Kansas City, Kansas, campus in the middle of the second year where the balance of the course is given. Coeducational since 1880. The requirement for admission is three years of collegiate work. The fees are \$300 per year; the nonresident fees are \$600 per year. The registration for 1947-1948 was 308; graduates 56. The last session began Sept. 17, 1947 and ended June 3, 1948. The next freshman and sophomore classes will begin Sept. 20, 1948 and end June 2, 1949. The session for the junior and senior classes began June 14, 1948 and will end June 2, 1949 with three-fourths of each class in school all the time and one-fourth on vacation each quarter. The Dean is Franklin D. Murphy, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirements for admission. Preference is given applicants with a degree or three college years leading to a degree. Fees are \$450 for residents of Louisville and Jefferson County and \$600 for nonresidents, per school year. The registration for 1947-1948 was 323; graduates 144. The school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. The last session began Sept. 22, 1947 and ended June 15, 1948. The next session begins on Sept. 22, 1948, and will end on June 14, 1949. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 13.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years collegiate work is required for admission. Total fees, \$120 each year for residents of Louisiana; additional tuition of \$400 each year for nonresidents. The registration for 1947-1948 was 308; graduates 80. The last session for freshman, sophomore and junior students began Sept. 4, 1947 and ended June 5, 1948; the senior session began April 9, 1947 and ended May 22, 1948. The next session for all classes will begin Sept. 7, 1948 and end June 4, 1949. The Dean is Vernon W. Lippard, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average \$650 per academic year. The registration for the 1947-1948 session was 477; graduates 97. The last session began on Sept. 2, 1947 and ended on June 2, 1948. The next session will begin Sept. 1, 1948 and will end June 1, 1949. The Dean is Maxwell E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees average \$628 per academic year. The registration for 1947-1948 was 297; graduates 78. The last session began on Sept. 29, 1947 and ended June 8, 1948. The next session will begin on Oct. 4, 1948 and will end June 14, 1949. The Dean is Alan M. Chesney, M.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, Lombard and Greene Streets, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work is required for admission. The tuition fees average \$513 for residents of the state; for nonresidents \$150 additional. The registration for 1947-1948 was 322; graduates 77. The last session began Sept. 18, 1947 and ended June 5, 1948. The next session will begin Sept. 16, 1948 and will end June 4, 1949. The Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street, Zone 18.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1818, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average \$800 per year. The registration for 1947-1948 was 235; graduates 54. The last session for freshmen, sophomores and juniors began Sept. 15, 1947 and ended June 5, 1948. The last senior class began June 16, 1947 and ended June 7, 1948. The present senior class began June 14, 1948 and will end June 6, 1949. All other classes will be enrolled Sept. 13, 1948 and the session will end May 28, 1949. The Dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. Two years of collegiate work are required for admission. The fees average \$830. The registration for 1947-1948 was 504; graduates 140. The last session began Sept. 22, 1947 and ended on June 10, 1948. The next session will begin Sept. 27, 1948 and will end June 23, 1949. The Dean is C. Sidney Burwell, M.D.

Tufts College Medical School, 416 Huntington Avenue, Zone 15.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission. Enrollment is generally limited to residents of the New England states. The course covers four years. The total fees for each of the four years, respectively, are \$685, \$680, \$680, \$690. The registration for 1947-1948 was 394; graduates 91. The last session for freshmen, sophomores and juniors began Sept. 24, 1947; for seniors June 9, 1947 and all classes ended June 20, 1948. The present session began for the seniors on June 14, 1948 and for the other classes will begin Sept. 22, 1948 and will end June 19, 1949. The Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1913. Coeducational since 1870. The entrance requirements are ninety semester hours. The fees average \$280 per academic year; for nonresidents \$500 a year. The registration for 1947-1948 session was 476; graduates 132. The last session began Sept. 22, 1947 and ended June 12, 1948. The next session will begin Sept. 20, 1948 and will end June 11, 1949. The Dean is Albert C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1512 St. Antoine Street, Zone 1.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is 90 semester hours from an accredited college or university. Until further notice, enrollment is limited to residents of the State of Michigan. The fees average \$525 for the school year. The registration for 1947-1948 was 226; graduates 60. The last session began Sept. 15, 1947 and ended June 12, 1948. The next session will begin Sept. 15, 1948 and will end June 18, 1949. The Dean is Hardy A. Kemp, M.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 11.—Organized in 1883 as the University of Minnesota Medical College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Total fees are \$307.95 per academic year for residents and \$526.95 for nonresidents. The registration for 1947-1948 was 391; graduates 140. The last session began Sept. 29, 1947 and ended June 12, 1948. The next session will begin Sept. 27, 1948 and will end July 23, 1949. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks; in the senior year the spring quarter is 11 weeks in length and graduation is in June. The Dean is Harold S. Dield, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1102 South Grand Boulevard, Zone 1.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1880, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. The fees average \$611 per academic year. The registration for 1947-1948 was 432; graduates, 120. The last session began Sept. 16, 1947 and ended June 1, 1948. The next session will begin Sept. 11, 1948 and will end June 1, 1949. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

Washington University School of Medicine, Kingshighway and Euclid Avenue, Zone 10.—Organized in 1812 as the Medical Department of St. Louis University. The first class graduated in 1813. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The fees average \$605. In 1949 the fees will be increased to \$700. The registration for 1947-1948 was 360; graduates, 90. The last session began on Sept. 15, 1947 and ended June 8, 1948. The next session will begin on Sept. 13, 1948 and will end on June 7, 1949. The Dean is Robert A. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 306 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The tuition fees average \$625 per academic year. The registration for 1947-1948 was 244; graduates, 65. The last session began Sept. 26, 1947 and ended June 3, 1948. The next session will begin Sept. 24, 1948 and will end June 2, 1949. The Dean is Percy J. Carroll, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average \$350 per academic year. The registration for 1947-1948 was 293; graduates, 67. The last session for seniors began March 26, 1947 and ended April 3, 1948. The last session for freshmen, sophomores and juniors began Sept. 15, 1947 and ended June 5, 1948. The next session will begin Sept. 13, 1948 and will end June 4, 1949. The Dean is Harold C. Luehl, M.D.

NEW YORK

Albany

Albany Medical College, 17 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average \$725 per academic year. The registration for 1947-1948 was 182; graduates 40. The last session began for the freshmen and sophomores on Sept. 29, 1947 and ended June 24, 1948 for the freshmen and June 14, 1948 for the sophomores; the last session for the juniors began April 7, 1947 and ended April 3, 1948, for the seniors June 2, 1947 to May 31, 1948. The present senior class began June 1, 1948 and will end May 31, 1949. The next session for other classes will begin Sept. 27, 1948 and will end June 13, 1949. The Dean is R. S. Cunningham, M.D.

Brooklyn

Long Island College of Medicine, 350 Henry Street, Zone 2.—Chartered in 1930, was originally organized in 1858 as the Long Island College Hospital. From the collegiate department the first class graduated in 1860 and the last class in 1930. The first class of the Long Island College of Medicine was graduated in 1931. It is coeducational. Three years of collegiate work, including specified courses, are required for admission. The fees are \$715 per academic year. The registration for 1947-1948 was 404; graduates 92. The last session for seniors began Sept. 15, 1947 and ended May 29, 1948. The last session for freshmen, sophomores and juniors began on Sept. 22, 1947 and ended on June 12, 1948. The next session begins for freshmen, sophomores and juniors on Sept. 20, 1948 and ends June 10, 1949; for seniors the next session will begin Sept. 13, 1948 and will end June 8, 1949. The President is Jean A. Curran, M.D. The Dean is Duncan W. Clark, M.D.

Buffalo

University of Buffalo School of Medicine, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is three years of col-

legiate work including certain prescribed science subjects. The fees average \$515. The registration for 1947-1948 was 273; graduates 74. The last session began on Sept. 22, 1947 and ended June 19, 1948. The next session will begin Sept. 20, 1948 and will end June 18, 1949. The Dean is Stockton Kimball, M.D.

New York

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average \$650 per academic year. The registration for 1947-1948 was 432; graduates 100. The last session began on June 9, 1947 for juniors and seniors and ended on June 1, 1948. The last session for freshmen and sophomores began on Sept. 11, 1947 and ended June 1, 1948. The present session began on June 7, 1948 and June 1, 1948 respectively, for the juniors and seniors and will end June 1, 1949, and will begin on Sept. 13, 1948 for the freshmen and sophomores and will end June 1, 1949. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. All students admitted are from approved colleges for premedical training. The requirement for admission is three years of college work. The fees average \$700 per year. The registration for 1947-1948 was 315; graduates 78. The last session began for senior students March 31, 1947 and ended March 26, 1948. The freshman, sophomore and junior classes began Sept. 24, 1947 and ended June 17, 1948. The next session for seniors begins on July 12, and for the remaining three classes on Sept. 15 and will end June 15, 1949. The Dean is Joseph C. Hinsey, Ph.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Three years of college work is the minimum requirement for admission but a degree is preferred. The fees average \$665 per academic year. The registration for 1947-1948 was 446; graduates 119. The last session began Sept. 15, 1947 and ended June 9, 1948. The next session will begin Sept. 20, 1948, and will end June 8, 1949. The President and Dean is J. A. W. Hetrick, M.D.

New York University College of Medicine, 477 First Avenue, Zone 16.—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. In 1947 the charter of the University and the statutes were amended, establishing the New York University-Bellevue Medical Center, which includes the College of Medicine. Coeducational since 1919. Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences. The fees average \$650 per academic session. The registration for 1947-1948 was 487; graduates 132. The last session began Sept. 22, 1947, and ended May 22, 1948 for freshmen, sophomores and seniors, and June 12, 1948 for juniors. The next session for all classes will begin Sept. 20, 1948, and will end May 27, 1949 for freshmen and sophomores, June 17, 1949 for juniors, and May 21, 1949 for seniors. The Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 7.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are \$600 per academic year. The registration for 1947-1948 was 267; graduates 66. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 19, 1948; the senior session began March 17, 1947 and ended March 27, 1948. The next session will begin on Sept. 20, 1948 and will end on June 18, 1949. The Dean is George H. Whipple, M.D.

Syracuse

Syracuse University College of Medicine, 766 Irving Avenue, Zone 10.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1884 the amalgamation with the university was made complete. Course

extended to four years in 1896. Coeducational since organization. Three years of a recognized college course are required for admission. The fees average \$800 per academic year. The registration for 1947-1948 was 190; graduates 51. The last session began Sept. 5, 1947 and ended June 14, 1948. The next session for all classes will begin approximately Sept. 7, 1948 and will end June 13, 1949. The Dean is H. G. Welskotten, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of two semesters in the first year and three quarters each in the sophomore, junior and senior years. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. An accelerated program was adopted July 6, 1942 and starting with the summer quarter of 1946 this accelerated schedule became optional; the students may take the two semesters of their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the Curriculum Committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are \$750 for three quarters. The registration for 1947-1948 was 270; graduates 66. During 1948 the quarters begin January 5, March 30, July 5, October 4 and end March 20, June 12, Sept. 18 and Dec. 18. The next freshman class will be enrolled Oct. 4, 1948 and will end June 11, 1949. The Dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Ninety semester hours of college work are required for admission. Clinical departments operate four quarters in the year; however, the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research, for study elsewhere, or for earning money to help defray the expenses of their education. Tuition averages \$514 per school year. The registration for 1947-1948 was 184; graduates 48. The last session for the freshman class began Sept. 29, 1947, sophomores Sept. 29, 1947, juniors and seniors March 24, 1947, and ended for freshmen and sophomores June 12, 1948, for juniors March 20, 1948, and for seniors Dec. 13, 1947. The present senior class began March 29, 1948, and will end Dec. 18, 1948. The next freshman and sophomore classes will begin Oct. 3, 1948 and will end June 11, 1949. The junior session began July 12, 1948 and will end June 11, 1949. The Dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1832). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Three years of collegiate work are required for admission. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program. The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year. Tuition is as follows: for legal residents of Cincinnati \$325 a year plus breakage fees (\$75 additional for those not legal residents). The registration for 1947-1948 was 321; graduates 76. The last session for freshmen, sophomores, and juniors began Sept. 19, 1947 and ended May 29, 1948. The session for seniors began Feb. 3, 1947 and ended Feb. 7, 1948. The next session for all classes will begin Sept. 24, 1948, and will end June 4, 1949. The Dean is Stanley Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission. The fees average \$612 per academic year. The registration for 1947-1948 was 312; graduates 77. The last session began Sept. 17, 1947 and ended June 5, 1948. The next session will begin Sept. 15, 1948, for freshmen, sophomores and juniors and will end June 4, 1949; the senior session will begin Aug. 30, 1948 and will end June 15, 1949. The Dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Nell and Eleventh Avenues, Zone 10.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average \$180 per academic year and \$225 additional for nonresidents. The registration for 1947-48 was 317; graduates 72. The last session for freshman, sophomore and juniors began on Sept. 30, 1947 and ended June 11, 1948; for seniors March 25, 1947 to March 19, 1948. The present session begins Sept. 28, 1948, and ends June 10, 1949. The last accelerated group will be graduated December 17, 1948. The Dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 800 North East Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years—90 semester hours. The fees for residents of Oklahoma are \$350; nonresidents, \$700. The registration for 1947-48 was 259; graduates 62. The last session began Sept. 15, 1947 and ended May 31, 1948. The next session will begin Sept. 20, 1948 and will end June 6, 1949. The Dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School, Marquam Hill, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are, respectively, \$388.50, \$388.50, \$383.50 and \$390 for residents of Oregon and \$150 a year additional for nonresidents. The registration for 1947-1948 was 270; graduates 65. The last session began Sept. 30, 1947 and ended June 18, 1948. The next session will begin Sept. 29, 1948 and will end June 17, 1949. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2.—Organized in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869, it and a corporation known from 1833 to 1867 as The Washington Medical College of Philadelphia and thereafter as The Hahnemann Medical College of Philadelphia were merged under the latter title. Assumed present title in 1885. The first class graduated in 1849. Coeducational beginning with 1941-1942 session. Three years of collegiate work in an approved college of arts and sciences are required for admission. Fees are respectively \$655, \$650, \$650, \$675. The registration for 1947-1948 was 405; graduates 112. The last session began for seniors April 11, 1947 and ended March 18, 1948. The last session for juniors began Sept. 29, 1947 and ended June 5, 1948. The last session for sophomores began Sept. 29, 1947 and ended June 19, 1948. The last session for freshmen began Sept. 22, 1947 and ended June 12, 1948. The next session for freshmen will begin Sept. 20, 1948 and will end May 28, 1949, other classes will begin Sept. 27, 1948 and will end for seniors June 16, 1949, for juniors June 11, 1949, for sophomores June 4, 1949. The Dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning in 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its board of trustees. For the class entering in 1949 the minimum entrance requirement will be three years of college work. The tuition fee is \$700 a year. The registration for 1947-1948 was 621; graduates 148. The last session began for all classes on Sept. 11, 1947 and ended for juniors and seniors on May 31, 1948; for freshman on June 7, 1948, for sophomores June 10, 1948. Graduation was on June 4, 1948. The next session will begin for all classes on Sept. 11, 1948 and will end in June 1948. The Dean is William H. Perkins, M.D.

Temple University School of Medicine, 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average \$710 per academic year. The registration for 1947-1948 was 459; graduates 124. The last session began Sept. 22, 1947 and ended June 17, 1948. The next session will begin Sept. 20, 1948 and will end June 16, 1949. The Dean is William N. Parkinson, M.D.

University of Pennsylvania School of Medicine. Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916, it took over the Medical-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work are required for admission. The tuition fee is \$700, with a deposit fee of \$15, a general fee including student health of \$15 and a matriculation fee of \$5. The registration for 1917-1918 was 179; graduates 127. The last session for seniors began April 7, 1917 and ended March 6, 1918. The last session for freshmen, sophomores and juniors began Sept. 22, 1917 and ended June 9, 1918. The next session will begin Sept. 27, 1918 and will end June 15, 1919. The Dean is John McK. Mitchell, M.D.

Women's Medical College of Pennsylvania, Henry Avenue and Abbottsford Road, Zone 29.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers four years of eight and one-half to nine months each. Total fees are \$675 yearly. The registration for 1917-1918 was 158; graduates 35. The last session began Sept. 11, 1917 and ended June 4, 1918. The next session will begin Sept. 16, 1918 and will end June 30, 1919. The Dean is Marlon Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3911 O'Hara Street.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducation since 1899. Entrance requirements are two years of collegiate work. The total fees are \$500 each year. The registration for 1917-1918 was 303; graduates 15. The last session for seniors began April 7, 1917 and ended March 27, 1918. The last freshman, sophomore and junior classes began Sept. 29, 1917 and ended June 26, 1918. The next session will begin on Sept. 13, 1918 for all classes and will end June 8, 1919. The Dean is William S. McElroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of the State of South Carolina, 16 Lucas Street, Zone 16.—Organized 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average \$125 each year for residents of South Carolina and \$625 for nonresidents of the state. The registration for 1917-1918 was 212; graduates 53. The last session began Sept. 25, 1917 and ended June 3, 1918. The next session will begin Sept. 23, 1918 and will end June 2, 1919. The Dean is Kenneth M. Lynch, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 874 Union Avenue, Zone 3.—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Two years of collegiate work are required for admission. The B.S. degree is conferred on students completing the science-medical curriculum of the University. The fees are \$175 quarterly. For residents of the state the charge is reduced \$50 each quarter. The registration for 1917-1918 was 511; graduates 99. During the next academic year the quarters begin September, January, March and July. The Dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth).—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Two years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year \$410, second year \$400, third year \$390 and fourth year \$400. The curriculum covers four academic

years of thirty-six weeks each. In September 1912, Meharry Medical College instituted the quarter system. The registration for 1917-1918 was 231; graduates 58. The last session began on Sept. 29, 1917 and ended on June 19, 1918. The next session begins on Sept. 27, 1918 and will end on June 18, 1919. The Director of Medical Education is Murray C. Brown, M.D.; the Dean is Michael J. Bent, M.D.

Vanderbilt University School of Medicine, Twenty-First Avenue South at Edgehill, Zone 4.—This school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years of nearly nine months each. The fees average \$615 per academic year. The registration for 1917-1918 was 207; graduates 54. The last session began Sept. 22, 1917 and ended June 7, 1918. The next session will begin on Sept. 27, 1918 and will end June 6, 1919. The Dean is Ernest W. Goodpasture, M.D.

TEXAS

Dallas

Southwestern Medical College, 2211 Oak Lawn.—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. The medical college is operated on the regular program offering three terms of twelve weeks each per academic year. Tuition for an academic year is \$575. Hospitalization charges are not included in this fee. Ninety semester hours are required for admission. Registration for 1917-1918 was 224; graduates 50. The last session began Sept. 8, 1917 and ended for freshmen and seniors on June 7, 1918 and for sophomores and juniors on June 26, 1918. The next session will begin Sept. 7, 1918 and end June 6, 1919. The Dean is W. Lee Hart, M.D.

Galveston

University of Texas School of Medicine, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. Ninety semester hours are required for admission to the freshman class matriculating in September 1948, but students are urged to complete the baccalaureate degree if possible prior to matriculation. The fees average \$113 per academic year, including health fees for medical care and hospitalization. The registration for 1917-1918 was 317. Graduates on Feb. 13, 1918 were 80. The last session began on Sept. 15, 1917 for the freshman, sophomore, and junior classes and ended on June 12, 1918. The senior class for the last session began on Feb. 10, 1917 and ended Feb. 13, 1918. The next freshman class will matriculate on Sept. 20, 1918, and the sophomore, junior, and senior classes will matriculate on Sept. 27, and all classes will end June 11, 1919. The Vice President is Chauncey D. Leake, Ph.D., and D. Bailey Calvin, Ph.D., is Dean of Student and Curricular Affairs.

Houston

Baylor University College of Medicine, Texas Medical Center.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are 90 semester hours of collegiate work. The course covers four years of eight months each. The fees are respectively \$556, \$546, \$531, \$556. The registration for 1917-1918 was 293; graduates 61. The last session began Oct. 6, 1917 and ended June 14, 1918. The next session will begin Oct. 4, 1918 and will end June 13, 1919. The Dean is W. H. Moursund, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine.—Organized in 1906. Coeducational since organization. Four year curriculum established March 1943. Three years of collegiate work are required for admission. The University of Utah has accepted in principle the policy of acceleration by graduating a class in three calendar years (4 academic years), but will admit only one class annually. The next freshman class will be admitted in June, 1949. All subsequent freshman classes will begin in June of each year. Classes are scheduled during four academic quarters (11-12 wks.) each calendar year. An entering first year student may be graduated in 12 academic quarters (3 calendar years) after date of admission; attendance during the summer quarter being required. Applications for admission (complete) must be submitted 9 months prior to opening date. The fees for each quarter average \$148; there is a nonresident fee of \$55 each year. The registration for 1917-1918 was 178; graduates 36. The last session began for freshmen June 16, 1917 and ended March 19, 1918. The present session for freshmen began June 14, 1918 and will end March, 1919. The present session for sophomores began March 27, 1918 and will end Dec., 1918. The present session for juniors and seniors began Jan., 1918 and will end Aug. 28, 1918. The Dean is Richard H. Young, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park. Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1833 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. For residents of Vermont the tuition fee averages \$500 per session. Nonresidents are charged an additional \$150 each session. A \$25 fee is charged for the doctor's degree. Registration for 1947-1948 was 153; graduates 40. The last session for freshmen, sophomores and juniors began Sept. 20, 1947 and ended June 21, 1948. The last senior class began July 13, 1947 and graduated June 21, 1948. The next senior class will begin July 3, 1948; the next freshman, sophomore and junior classes will begin Sept. 18, 1948 and all classes will end June 20, 1949. The Dean is William Eustis Brown, M.D.

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the average tuition fee is \$428 per academic year; for nonresidents, \$578. The registration for 1947-1948 was 250; graduates 59. The last session began Sept. 15, 1947 and ended June 14, 1948. The next session will begin Sept. 14, 1948 and will end June 13, 1949. The Dean is Harvey E. Jordan, Ph.D.

Richmond

Medical College of Virginia, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. Three years of collegiate work, as a minimum, are required for admission. Preference, however, is given

to applicants with a baccalaureate degree. Fees average \$510 per academic year. Nonresidents are charged an additional \$200 each year. The registration for 1947-1948 was 314; graduates 85. The last session began Sept. 15, 1947 for second, third and fourth year classes and ended June 8, 1948. The last session for the first year class began Sept. 10, 1947 and ended June 8, 1948. The subsequent session will begin Sept. 9, 1948 for the first year class and Sept. 13, 1948 for the second, third and fourth year classes and will end June 7, 1949. The Dean is Harvey B. Haag, M.D. The Associate Dean and Chairman of the Admissions Committee is Mr. George W. Bakeman.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue, Zone 6.—Organized 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Fees for the first, second and third years are \$280, for the fourth year \$190 per academic year for residents. An additional fee of \$200 per year is charged nonresidents. Registration for 1947-1948 was 278; a class of 59 was graduated June 19, 1948. The last session for freshman, sophomore and junior students began Sept. 9, 1947 and ended June 19, 1948. The last session for seniors began June 9, 1947 and ended June 19, 1948. The present senior class began June 28, 1948 and will graduate June 18, 1949. Freshman, sophomore and junior classes will begin Sept. 20, 1948 and will end June 18, 1949. The Dean is William S. Middleton, M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are \$600 per academic year. The registration for the 1947-1948 session was 350; graduates 82. The last session began Sept. 29, 1947 and ended June 5, 1948. The next session for freshman, sophomore and junior students will begin Sept. 27, 1948 and will end May 28, 1949. The present session for seniors began July 5, 1948 and will end June 12, 1949. The Dean is John S. Hirschboeck, M.D.

APPROVED MEDICAL SCHOOLS IN CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. New course—three years premedical, four years of medicine—offered with the session 1947-1948. Tuition for the four years is \$350 per session. The registration for 1947-1948 was 171; graduates, two classes, old five year—32, new four year—44. The last session began Sept. 16, 1947 and ended June 15, 1948. The next regular session will begin Sept. 7, 1948 and end June 15, 1949. The Dean is John W. Scott, M.D.

Manitoba

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include two years of collegiate work in the faculty of arts and sciences of a recognized university. This will be increased to three years with the session 1949-1950. The course extends over four years of eight months each and a hospital internship. The fees average \$396 yearly. The registration for 1947-1948 was 280; graduates 62. The last session began Sept. 15, 1947 and ended May 18, 1948. The next session will begin on Sept. 10, 1948 and will end on May 15, 1949. The Dean is A. T. Mathers, M.D.

Nova Scotia

Dalhousie University Faculty of Medicine, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the *Governors of Dalhousie University and the Corporation of the Halifax Medical College*, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average \$331 yearly; \$250 additional registration fee payable by students outside the British Empire. The registration for 1947-1948 was 204; graduates 31. The next session for all classes will begin Sept. 14, 1948 and will end May 17, 1949. The Dean is H. G. Grant, M.D.

Ontario

Queen's University Faculty of Medicine, Kingston.—Organized in 1829. First class graduated in 1855 and a class graduated each subsequent year. Fees for the first year amount to \$342.50 and for each of the other five years \$358.50. The course consists of five sessions of 30 teaching weeks, and a sixth year spent in a hospital designated by the University. The degrees of M.D., C.M. are not awarded until the end of the sixth year. Freshmen will be admitted annually. Registration for 1947-1948 was 270. The last session began Sept. 22, 1947 and ended May 15, 1948. The next session will begin Sept. 27, 1948 and will end May 14, 1949. The last convocation was held on June 19, 1947. As a result of the discontinuance of the accelerated medical course there will be no graduating class until June 1949. The Dean is G. Spencer Melvin, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honour college years of nine months each and four years of ten months each in the Faculty of Medicine. The total fees to residents of Canada for the last four years, respectively, are \$390, \$390, \$390, \$398; nonresidents are charged \$700, \$700, \$700, \$708 for each of the last four years. The registration for 1947-1948 was 217; graduates 40. The last session began Sept. 8, 1947 and ended June 11, 1948. The next session begins Sept. 13, 1948 and ends May 21, 1949. The Dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, Toronto 3.—Organized in 1843 as the Medical Faculty of King's College, Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The degree of M.D. is conferred after 4 years in the study of medicine. Admission to the medical course is gained following honour matriculation and after two years in the study of premedical requisites in the University of Toronto. A certain number are admitted each year to the first medical year who hold Arts degrees from recognized universities and who have covered the necessary work in the humanities and sciences. The B.Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree, or under certain circumstances for an extra year's work as an undergraduate. The registration for 1947-1948 in the medical and premedical years was 945; graduates 129. The last class began Sept. 23, 1947 and ended May 1,

1948. The next session for first and second premedical years will begin on Sept. 21, 1948 and for first, second, third and fourth medical years on Sept. 28, 1948. The session for premedical years will end on April 30 and for medical years on May 14, 1949. Students will graduate annually in June. The Dean is J. A. MacFarlane, M.B.

Quebec

McGill University Faculty of Medicine. 3610 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1917. Four years of collegiate work are required for admission. The total fees for each of the four medical years are \$461. The registration for 1947-1948 was 377; graduates 119. The last session began Sept. 3, 1947 and ended June 1, 1948. The next session will begin Sept. 7, 1948 and will end June 4, 1949. The Dean is Frederick Smith, M.D.

University of Montreal Faculty of Medicine. 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of

Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The requirements for admission are: First, a B.A. degree (or its equivalent); second, one year premedical in the faculty of pure sciences (or an entrance examination on the premedical subjects). An internship is required for graduation. The fees average \$285 yearly. The registration for 1947-1948 was 382; graduates 100. The last session began Sept. 15, 1947 and ended May 8, 1948. The next session will begin Sept. 15, 1948 and will end May 14, 1949. The Dean is Edmond Dubé, M.D.

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1818, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The fees for each of the medical years average \$226 for residents of Canada. Nonresidents are charged an extra fee of \$200 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1947-1948 was 551; graduates 72. The last session began Sept. 8, 1947 and ended June 3, 1948. The next session will begin Sept. 15, 1948 and will end June 1, 1949. The Dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work or ninety semester hours of credit. Fees average \$381 annually. There is a nonresident fee of \$200. The school operates on an accelerated program by accepting two freshman classes each session. The last session began Sept. 15, 1947 and ended May 29, 1948. Additional freshman class admitted Feb. 2, 1948 and will complete the year Sept. 25, 1948. The sophomore session began July 7, 1947 and ended March 13, 1948. An additional sophomore session began Sept. 27, 1947 and ended July 10, 1948. The next freshman class will begin Sept. 20, 1948 and will end May 28, 1949; the next sophomore class will begin Nov. 1, 1948 and will end July 9, 1949. The Dean is David S. Pankratz, M.D.

MISSOURI

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are \$206, for the second \$300. The registration for 1947-1948 was 73. The last session began Sept. 16, 1947 and ended June 4, 1948. The next session begins Sept. 17, 1948 and will end June 7, 1949. The Dean is Trawick H. Stubbs, M.D.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the Trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year. The tuition is \$600 for each year. The registration for 1947-1948 was 46. The last session began on Oct. 3, 1947 and ended June 13, 1948. The next session will begin Sept. 27, 1948 and will end June 12, 1949. The Dean is Rolf C. Syvertsen, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. Certificates are awarded on the completion of two years' work in medicine. The fees are \$375 for the first year and \$385 for the second year for residents; for nonresidents an additional fee of \$100 per year. The registration for 1947-1948 was 100. The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years. The full program will probably not get under way for three to four years. The last session began Sept. 23, 1947, and ended June 5, 1948. The next session will begin Sept. 20, 1948, and end June 4, 1949. The Dean is W. Reece Berryhill, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1907. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The fees are \$150 each year for resident students and \$228 for nonresidents. The registration, academic year 1947-1948, was 51. The last session began Sept. 25, 1947 and ended June 12, 1948. The next session will begin Sept. 20, 1948 and will end June 10, 1949. The Dean is W. F. Potter, M.D.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The tuition is \$260 for first year residents and \$280 for second year residents; \$470 for first year nonresidents and \$490 for second year nonresidents. The registration for 1947-1948 was 54. The last session began Sept. 8, 1947 and ended May 29, 1948. The next session will begin Sept. 6, 1948 and will end May 30, 1949. The Dean is Donald Slaughter, M.D.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1902. Gives the first two years of the medical course, but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. Fees for residents of the state are, respectively, \$254 and \$264; nonresidents, \$150 additional each year. The registration for 1947-1948 was 55. The last session began Sept. 15, 1947 and ended May 31, 1948. The next session will begin Sept. 13, 1948 and will end May 30, 1949. The Dean is Edward J. Van Liere, M.D.

APPROVED SCHOOL OF THE BASIC MEDICAL SCIENCES IN CANADA

Saskatchewan

University of Saskatchewan School of Medical Science, Saskatoon. Organized in 1926. Coeducational. Offers the first two years of the medical course. Two years of collegiate work are required for admission. The B.A. degree is conferred at the end of the second year. The fees are \$298. The registration for 1947-1948 was 55. The last session for freshmen began Sept. 22, 1947 and ended June 26, 1948. The next session will begin Sept. 20, 1948 and will end June 21, 1949. The Dean is W. S. Lindsay, M.B.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

An American board in a specialty is organized (a) to assist in improving the quality of graduate education in that field, (b) to establish minimum educational and training standards in the specialty, (c) to determine whether candidates have received adequate preparation, (d) to provide comprehensive examinations to determine the ability and fitness of such candidates and (e) to certify to the competence of those physicians who meet these requirements.

Sixteen boards in the specialties have been organized and are approved by the Council on Medical Education and Hospitals of the American Medical Association, and as of March 1, 1948, 31,498 physicians have been certified. The following table lists the approved

TABLE 22.—Approved Examining Boards in Medical Specialties

Name of Board	Year of Incorporation	Total Certificates Awarded to		Total Certified Specialists Living March 1, 1948
		March 1, 1947	March 1, 1948	
American Board of Pediatrics.....	1933	2,572	2,749	*
American Board of Psychiatry and Neurology	1934	2,448	2,836	2,720
American Board of Orthopaedic Surgery	1934	1,042	1,214	1,153
American Board of Dermatology and Syphilology.....	1932	890	972	901
American Board of Radiology.....	1934	2,373	2,622	*
American Board of Urology.....	1935	1,136	1,245	1,170
American Board of Obstetrics and Gynecology	1930	2,216	2,470	2,315
American Board of Internal Medicine	1936	4,449	5,008	*
American Board of Pathology.....	1936	1,178	1,462	1,427
American Board of Ophthalmology	1937	2,561	2,637	2,306
American Board of Otolaryngology	1924	3,988	4,083	*
American Board of Surgery.....	1937	2,962	3,272	*
American Board of Anesthesiology.....	1938	316	417	412
American Board of Plastic Surgery	1937	171	175	156
American Board of Neurological Surgery	1940	191	228	226
American Board of Physical Medicine	1947	...	86	86
Totals.....		28,496	31,498	12,872
Certification in Subspecialties *				
By the American Board of Internal Medicine				
Allergy.....		95	106	
Cardiovascular disease.....		361	302	
Gastroenterology.....		183	208	
Pulmonary disease.....		163	174	
By the American Board of Pediatrics				
Allergy.....		17	32	
By the American Board of Surgery				
Proctology.....		79	80	
Totals.....		898	982	

* Number deceased specialists not available.

specialty boards, the date of organization, the number of certificates awarded prior to March 1, 1947 and the number certified to March 1, 1948. Likewise shown in these two categories are the numbers certified in the subspecialties. A third column in this table includes the total number of living certified specialists for the boards that were able to supply such figures. On March 1, 1947 there were 28,496 physicians certified by the fifteen boards in operation. During 1947 the American Board of Physical Medicine was approved and certified 86 physicians. Altogether, 3,002 physicians were certified from March 1, 1947 to March 1, 1948. Up to this latter date a total of 31,498 physicians

have been certified by sixteen boards. Up to March 1, 1947, 898 certificates in subspecialties were awarded, and during the ensuing year 84, bringing the total in the subspecialties to 982 as of March 1, 1948.

Several of the boards have made changes in their requirements. For the guidance of candidates desiring to qualify for certification, the requirements of the boards are reprinted below verbatim from their published announcements.

AMERICAN BOARD OF ANESTHESIOLOGY

CURTISS B. HICKCOX, Philadelphia.
JOHN S. LUNDY, Rochester, Minn.
CHARLES F. McCUSKEY, Los Angeles.
E. A. ROVENSTINE, New York.
HENRY S. RUTH, Philadelphia.
MEYER SAKLAD, Providence, R. I.
RALPH M. TOVELL, Hartford, Conn.
ROLLAND J. WHITACRE, Cleveland.
JOHN W. WINTER, San Antonio, Texas.
PAUL M. WOOD, Secretary-Treasurer, 745 Fifth Avenue, New York 22.

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

A. *General*.—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.

2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.

3. Practice must have been limited to anesthesiology for five calendar years, of which at least two must have been devoted to special training.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all the preliminary requirements and have clearly demonstrated their identity as anesthetists over a period of years, but whose formal training does not comply with the full requirements.

B. *Professional Standing*.—1. An applicant must be a graduate of a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or a diplomate of the National Board of Medical Examiners.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the Board of Anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing, and that he has received adequate training in Anesthesiology.

C. *Special Training and Practice*.—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than five calendar years (including period of training).

2. The board requires the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

EXAMINATIONS

The qualifying examination will be divided into Part I, written; Part II, oral, and Part III, practical

PART I

1. An applicant to be eligible for Part I must meet all supervised training requirements, and his credentials must be approved by the board.

2. Part I may be given simultaneously in several places, which the board may deem suitable for the purpose, on the third Friday of each January.¹

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I and must be a member of the American Medical Association.

2. Part II examinations will be held during the third week in October at a place announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Later, however, as the demand grows, it may be necessary to establish additional dates when this part may be held.²

PART III

1. The examiners will observe the work of the candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

Conduct of Examination.—Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology and, on the other hand, to prevent laxity, which would nullify the main purpose of the certification. Thus the type of examination will depend upon a careful review of the work done, years of practice, special courses of study and professional standing of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics and clinical practice in relation to anesthesiology.

Oral examinations will cover topics in the above list, especially as to their clinical application.

Practical demonstrations will be required of the management of the candidate's clinical practice in his local surroundings. This may include inspection of clinical records, records of departmental activities, library facilities, available apparatus, and demonstrations of application of anesthetic agents, methods and technics included in anesthesiology.

Grades.—A candidate must receive a passing average for each part to be entitled to certification.

A candidate who fails in his examination in Parts I, II or III may be permitted reexamination at yearly intervals for two (2) consecutive examinations in that part without further payment of fee. The board may, however, for sufficient reason, deny a candidate the privilege of reexamination.

Applicants who fail to exercise the examination privilege within three (3) years of the date of becoming eligible for examination are required to file a new application and pay a new application fee.

Fee.—The fee shall be \$100. At least \$25 shall be paid on filing the application (of which sum \$15 will be returned if the candidate is not accepted for examination) and the remainder shall be paid before taking the examinations.

This board is a nonprofit organization. All fees are to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office, and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

Additional Information.—Every candidate applying for certification must personally appear before the board before being certified.

Application must be made on special blanks to be procured only on written request by the applicant from the secretary of

1. If there are sufficient applicants written examinations may be held on the third Friday of July annually.

2. Oral examinations may be held during the third week of April annually.

The American Board of Anesthesiology. They must be completely and accurately filled out, accompanied by the other required credentials, and filed with the secretary after one year of supervised instruction and at least three months prior to the date of examination.

The secretary cannot make any eligibility rulings. These are made only by the entire board on recommendation of the appropriate committees after reviewing the candidate's formal application. Applications cannot be considered for classification and action by these committees unless accompanied by an application fee of \$25, \$10 of which is not returnable.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

FRANCIS E. SENEAR, President, Chicago.

J. GARDNER HOPKINS, Vice President, New York.

GEORGE M. LEWIS, Secretary-Treasurer, 66 East 66th Street, New York 21.

FRANK E. CORMIA, Assistant Secretary, New York.

NELSON P. ANDERSON, Los Angeles.

ANTHONY C. CIPOLLARO, New York.

HENRY E. MICHELSON, Minneapolis.

PAUL O'LEARY, Rochester, Minn.

BEDFORD SHIELMIRE, Dallas, Texas.

FRED D. WEIDMAN, Philadelphia.

REQUIREMENTS FOR ELIGIBILITY FOR EXAMINATION

I. GENERAL REQUIREMENTS

1. High ethical and professional standing.

2. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. The credentials of graduates of foreign schools must be approved by the National Board of Medical Examiners.

3. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

4. A license to practice medicine issued by endorsement of the certificate of the National Board of Medical Examiners or following examination.

5. Membership in the American Medical Association or membership in a similar society recognized as having the same purpose as the American Medical Association.

6. Citizenship in the United States or citizenship—meaning native citizens—in Canada or Cuba.

II. SPECIAL REQUIREMENTS

Applicants for certification of the Board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the Board. This classification will be abolished after Jan. 1, 1949.

Group B consists of physicians who have completed an approved three year period of training.

In accordance with the program recommended to the various specialty boards by the Advisory Board for Medical Specialties the following minimum requirements of special training for admission to examination have been established:

A period of study, after the internship, of not less than three years. This training may be obtained as resident, fellow or graduate student in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology. This period of specialized training shall include:

(a) At least one calendar year in an institution approved for three year training (less one month for vacation).

(b) Graduate training in the basic medical sciences which are necessary for the proper understanding and treatment of the diseases involved in this specialty.

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and material medica, and physics of physical therapy.

(c) Carefully supervised clinical and laboratory experience in the specialty.

(d) Annual examinations in the clinical, laboratory and public health aspects of dermatology and syphilology.

PRECEPTORSHIP TRAINING

Candidates may spend one year of their training in the office of a diplomate of the board, who has also been approved as a preceptor by the board. The office training may be divided over two years, with one-half day spent in the office of the preceptor and the other half day in an approved institution. Preceptorship training may be taken during any of the years of training. Time spent with an instructor who has not been approved by the board may count only as experience and not as training. A list of approved preceptors is available in the office of the secretary.

The board assumes the responsibility of determining the standards of knowledge to be acquired, but upon the candidate rests the responsibility of acquiring the knowledge to fill these standards.

PRELIMINARY REGISTRATION, APPLICATION AND FEE

All students beginning their graduate training should file a preliminary registration form with the secretary.

In order that the committee on requirements may appraise carefully the qualifications of candidates, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. Applications should be filed early in order to obtain full advantage of the sets of histopathologic slides which are available through the Army Medical Museum in Washington. The completed application blank should be sent, at least two months before the date of examination, to the secretary of the board together with the required reprints, photographs and a registration fee of \$25 which will not be refunded under any circumstances. No application will be considered until this fee is received. An examination fee of \$75 is payable when the candidate is notified that his application is acceptable to the board. The fee of \$100 has been carefully computed and is used entirely for administrative purposes. Examiners for the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in Group B will be required to pass a written examination. This written examination on clinical, basic science and laboratory subjects will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination. Candidates must pass the written examination before being admitted to the oral examination.

Applicants classified either in Group A or in Group B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward where individual cases will be discussed with each candidate, as well as various subjects related to the skin such as histopathology, mycology, allergy and physics of physical therapy. The board reserves the right to add to this list other subjects within the field of dermatology and syphilology.

A candidate for a certificate may take both the written and oral examinations at the next regular examination of the board after he has completed three full years of training in the specialty; this provision does not affect the regulations about the issuance of the certificate. (See Certificates.)

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will try especially to ascertain the breadth of his

knowledge in the basic, as well as the clinical aspects of cutaneous medicine, to test his familiarity with the recent literature of dermatology and syphilology and to ascertain his general qualifications as a specialist in this branch of medicine.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instructions for the purpose of overcoming deficiencies in the applicant's knowledge of this specialty.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

The oral examination may be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the Board.

REEXAMINATIONS

If the candidate fails or is conditioned in an examination he will be admitted to a second examination after one year, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$75 before reexamination.

A candidate who has failed twice must file a new application and pay an additional fee of \$75.

CERTIFICATES

A certificate will not be issued until the candidate has completed at least five years of dermatologic training and experience. The granting of this certificate by the board indicates that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to improve the standards of practice of dermatology and syphilology by encouraging improvement in the opportunities for and quality of training for specialists in this field of medicine, and to certify as specialists those who voluntarily comply with the requirements of the board.

Certificates will be issued only to physicians in the United States and its possessions, in Canada, and in Cuba.

AMERICAN BOARD OF INTERNAL MEDICINE

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REQUIREMENTS FOR ADMISSION TO EXAMINATION AND CERTIFICATION

Each applicant for certification by this board must satisfy the qualifications listed below: (I) General Qualifications A, B, C, D; (II) Professional Qualifications A, B, C, D. For exceptions to the requirements C and D under Professional Qualifications see paragraph G.

I. GENERAL QUALIFICATIONS

A. All candidates must be citizens of the United States or Canada.

B. All candidates must present evidence of satisfactory moral and ethical standing in the medical profession.

C. All candidates must be active members in good standing in their county and state medical societies in their state of legal residence. Under unusual and exceptional circumstances the board reserves the privilege of modifying this requirement. (This ruling shall not apply to commissioned officers of the United States regular Army or Navy or United States Public Health Service who are otherwise members of the American Medical Association.)

D. Canadian citizens applying for admission to examination must be active members of the Canadian Medical Association.

II. PROFESSIONAL QUALIFICATIONS

A. Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association at the date of graduation.

B. Satisfactory completion of an approved internship of not less than twelve months.¹

C. Approved residency or fellowship training in internal medicine according to the following plan (Plan A) or one of the alternate plans described under paragraph D.

Plan A: A residency or fellowship in internal medicine for a period of not less than three years in a hospital or other institution approved by the Council on Medical Education and Hospitals of the American Medical Association for residency or fellowship in internal medicine. In addition, two years of practice of clinical internal medicine will be required. The board will accept the following equivalents as satisfying one year only of the three years of residency or fellowship to which this paragraph refers.

1. A second year (or a part thereof) of approved internship in a hospital approved for resident training in internal medicine if limited to the medical service (or medical specialties noted under 2) for one year and if recognized as being the equivalent of an assistant residency by the Medical Director of the hospital and the Chief of the Medical Service.

2. One year of approved residency in one of the medical specialties: allergy, cardiovascular disease, gastroenterology, hematology, pulmonary diseases, neurology, pediatrics and psychiatry.

3. One year of approved residency in pathology.

4. One year as a graduate student or as an instructor in an approved medical school on a full time basis in bacteriology, biochemistry, pathology, pharmacology, physiology or internal medicine.

5. An advanced degree in the fundamental sciences.

NOTE.—Graduate training credit for the time involved will be allowed veterans and other candidates who take and satisfactorily complete postgraduate courses in internal medicine or the basic medical sciences provided by accredited medical schools. This ruling shall not apply to courses of less than three months or more than twelve months duration. A certificate of creditable performance, based in part, at least, on a formal examination upon completion of the course, will be required.

D. Alternate Training Plans: The board firmly believes that the plan of intensive training prescribed above offers the best opportunity for a young physician to prepare himself to meet his responsibilities as a specialist in internal medicine. It is recognized, however, that capable individuals may accomplish the same result in a longer period of time during which the training is less intensive. The board realizes that a number of medical graduates cannot follow the shorter and more desirable plan either because suitable residencies are not available or, in some instances, because of personal and economic reasons. Accordingly the board has modified its previous regulations governing eligibility for admission to examination. In doing so the board has not modified its standards of examination. It has liberalized its eligibility requirements for admission to

examination by accepting half time formal training and the practice of internal medicine under favorable circumstances as to professional and hospital contacts, in lieu of part of the full time requirements. It is hoped that by this means exceptional individuals may acquire a knowledge of medicine and experience in its application sufficient to qualify for certification.

The program already described (Plan A), which consists of three years of formal training in an approved residency or its equivalent, following internship, and two additional years in the practice of internal medicine, is recommended by the board. Variations in this program are now made subject to the following regulations.

1. The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy or United States Public Health Service for one year or more, beginning on or subsequent to Dec. 7, 1941 and terminating on or before Jan. 1, 1947. Commissioned officers serving less than one year prior to Jan. 1, 1947 may apply that interval as graduate training.

2. Following one year of internship and two years of approved residency,² the remaining requirements may be satisfied by: Plan B; that is, by two years of half time formal training followed by two years of practice limited to internal medicine, or by Plan C; that is, by five years of practice limited to internal medicine.

3. Following one year internship and one year of approved residency, the remaining requirements may be satisfied by:

Plan D³; that is, by four years of half time formal training followed by two years of practice limited to internal medicine; or by:

Plan E³; that is, by two years of half time formal training followed by five years of practice limited to internal medicine, or by:

Plan F; that is, by eight years of practice limited to internal medicine.

4. In every instance at least two years of practice in internal medicine must be included, but in instances in which four years of practice are substituted for one year of residency, only one additional year of practice will be required; when more than eight years of practice are substituted for two years of residency an additional year of practice will not be required.

5. Physicians who have practiced internal medicine for twelve years following an approved internship may qualify for the examinations without further training (Plan G).

Half time formal training under expanded plans B, D and E is defined as follows:

1. Half-time⁴ as an instructor in clinical medicine in a recognized medical school in the United States or Canada.

2. Half-time⁴ in a research fellowship sponsored by a recognized medical school in the United States or Canada.

3. Half time⁴ as a graduate student in an approved graduate medical school in the United States or Canada.

E. Practice Requirements: A period of not less than two years of practice in the general field of clinical internal medicine or in the more specialized branches of medicine. (See exceptions, paragraph 4. This requirement may be satisfied by independent practice or in association with a recognized internist.

NOTE: Although in general the board believes it desirable to complete the three years of formal training before satisfying the requirements of practice a reversal of this order is acceptable.

F. Graduates of Foreign Schools: At the present time neither the Council on Medical Education of the American Medical Association nor any other educational agency in the United States has the machinery to evaluate adequately the quality of foreign medical education. This board must, therefore, evaluate

1. During the period in which the 9-9-9 program was in effect an approved internship of nine months will satisfy the requirement of twelve months. A residency of nine months is considered as nine months only.

2. For the second year of approved residency one of the equivalents described under C may be substituted.

3. Refer to description of half-time formal training.

4. Certification by the head of department in which the work was done is required.

the fundamental educational credentials and other qualifications of each individual candidate educated abroad who applies for admission to examination. (Requirements for graduates of foreign schools may be obtained on request to the board—One West Main Street, Madison 3, Wis.).

G. Candidates Graduating Prior to 1937: The requirement of three years of graduate training will not apply to candidates graduating from approved medical schools in the United States and Canada in 1936 or previous thereto, provided such candidates have limited their work to the field of internal medicine for at least two years, and provided each candidate is recognized as an internist by his colleagues in his community.

H. "Preceptor Training": Preceptor type training is not recognized in satisfaction of any part of the three year requirement of formal graduate training.

I. The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy, or United States Public Health Service for one year or more, beginning on or subsequent to Dec. 7, 1941 and terminating on or before Jan. 1, 1947.

Depending upon the nature of the duty assignments, after Jan. 1, 1947 active duty as a commissioned officer in the United States Army Reserve Corps, United States Naval Reserve Corps or United States Public Health Service may be applied in satisfaction of one year of the requirements of practice but will not be regarded as satisfying any part of the graduate training requirements, unless the officer is assigned as a resident in internal medicine, neurology, psychiatry or pathology in an Army, Navy or United States Marine hospital which is approved by the Council on Medical Education and Hospitals of the American Medical Association for resident training in the divisions of medicine referred to.

One written examination will be held each year, effective Jan. 1, 1949. Examinations will be held on the third Monday in October of each year. Applications for this examination must be filed by May 1 of the year concerned.

PRINCIPLES OF TRAINING

The American Board of Internal Medicine is interested in the fact that the candidate has embarked on a career of study voluntarily and has thereby expressed the desire to excel and to participate personally in the world's progress in medicine.

Preparation must be based on years of continuous thoughtful study. Therefore, in suggesting a program for those who wish advice, the board hopes to assist the candidates to avoid inferior and superficial programs which may lead to failure and disappointment in later years.

The board believes that all internists should have a sound fundamental knowledge of anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology. Such knowledge is essential to the continued progress of any internist. The board anticipates that adequate training will be obtained in the basic sciences as applied to internal medicine during a formal three year residency program.

The board wishes to emphasize that time and training are but a means to the end of acquiring a broad knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge rests with the candidate. The responsibility of maintaining the standards of knowledge required for certification devolves on the board.

APPLICATION

Candidates for examination must make their application on a prescribed form which may be obtained from the office of the Assistant Secretary-Treasurer.

The application must contain a record of the candidate's premedical and medical training as well as of internships, residencies, graduate study, hospital or dispensary staff appointments, teaching positions, service in the armed forces, membership in medical societies, medical papers published and the names of three or more well known internists to whom the board may write for professional and character reference.

The application must be accompanied by one recent signed photograph of the candidate mounted on the application, and the registration and examination fee of \$40, which fee will cover both the written and oral examinations. An additional fee of \$10 will be required when the certificate is issued.

A fee of \$20 is required for each additional oral examination.

Candidates who have taken one written examination or one oral examination while on active duty overseas as a commissioned officer in the United States Army, Navy, or Public Health Service will be authorized to take a fourth written examination or a fourth oral examination if necessary. This regulation will not apply to candidates in the armed forces who took their written or oral examinations in the United States.

METHOD OF EXAMINATION

The examinations for certification by the board comprise two parts: Part I is written; Part II is clinical and is an oral examination. The written examination is held simultaneously in different sections of the United States and Canada on the third Monday of February and October of each year. This examination is divided into a morning and afternoon period, for each of which three hours are allowed. The questions asked are framed in such manner as the board elects; in general, there will be questions designed to test the applicant's knowledge of applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine, and his basic clinical acumen.

Candidates must pass the written examination before admission to the oral examination will be authorized. The oral examination is conducted under the direct supervision of the board. It is held near the time and place of the annual meetings of the American Medical Association and the American College of Physicians. The examination is conducted at the bedside of the patient. Each candidate is assigned 2 or more patients and is expected to be sufficiently familiar with whatever problems present themselves to satisfy the board of his clinical expertness.

REEXAMINATION

Effective Jan. 1, 1946, not more than three written examinations will be authorized. The interval between the first and the second written examination will be one year. The interval between the second and the third written examination will be not less than two years. A longer period may be required by the board. A fee of \$10 is required for each additional written examination.

This ruling does not make it mandatory for a candidate to repeat the examination within one or two years, since each candidate may elect a longer interval.

Not more than three oral examinations are authorized. The interval between the first and the second oral examination will be one year. The interval between the second and the third oral examination will be not less than two years. A longer period may be required by the board. Candidates may elect a longer interval if desired. A fee of \$10 is required for each additional oral examination.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board and shall bear the official seal of the board.

Certificates of the board will be issued to candidates who have satisfactorily completed the written and oral examinations and have been found qualified by the board to practice the specialty of internal medicine. Specialty certification will be designated on the certificate, for those so certified.

ADVISORY BOARDS

Allergy, cardiovascular disease, gastroenterology and pulmonary diseases are recognized specialties.

All candidates must pass the written and oral examinations in internal medicine before admission to examination in a specialty of medicine. The specialty examinations are oral

only and may be taken the day following the examination in general medicine or at any other regularly scheduled oral examination.

Applications for consideration in the specialties referred to must be approved by the advisory board concerned and confirmed by this board.

Application forms will be forwarded upon request to the office of the Assistant Secretary-Treasurer.

AMERICAN BOARD OF NEUROLOGICAL SURGERY

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HARRY WILKINS, Oklahoma City.

Eligibility for Examination: To be eligible for examination and certification by the Board, all candidates must possess the preliminary and basic medical qualifications required by the Advisory Board for Medical Specialties as applied to all specialties as follows:

A. GENERAL QUALIFICATIONS

1. Moral and ethical standing in the profession satisfactory to the Board of Directors.
2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.
3. Those who limit their surgical activities to the practice of neurological surgery.
4. It shall be discretionary with the board to accept for examination candidates who have been in practice more than six years but whose formal training fails to meet the full requirements.
5. Properly qualified candidates who are permanent residents in and citizens of other countries and are legally qualified to practice medicine there, and who have received their training in neurological surgery in the United States of America or Canada may apply for certification by The American Board of Neurological Surgery.

B. PROFESSIONAL STANDING

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school which is acceptable to the American Board of Neurological Surgery, Inc.
2. Completion of a surgical internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the Board.

C. SPECIAL TRAINING

A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the intern year, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery, Inc., for the training of neurological surgeons.

This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to practice of neurological surgery will be required in the examination.

An additional period of not less than two years in the practice of neurological surgery.

APPLICATIONS

An application on the official application blank in such form as may be adopted from time to time by the Board of Directors, in order to be considered at any meeting, must be in the hands of the secretary-treasurer of the board not less than sixty days before the date of such meeting.

The secretary-treasurer of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary-treasurer may deem desirable, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary-treasurer its recommendation whether or not the applicant is acceptable. The certification of a candidate shall be approved by a majority of the members of the entire board at any meeting held for such certification.

PAYMENT OF FEES

The fee for certification, with or without examination, shall be seventy-five dollars (\$75).

The candidate for examination on filing his application shall accompany it with an application fee of twenty-five dollars (\$25). When notified by the secretary-treasurer that he is eligible for examination he shall send the examination fee of fifty dollars (\$50) to the Secretary-Treasurer at least two weeks before the date of the examination. The application fee will be returned if the candidate is not accepted for examination.

REEXAMINATION

A candidate who has failed in one examination is eligible to reexamination in the subject, or subjects, in which he failed, within three years, on payment of a reexamination fee of ten dollars (\$10). A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

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ROBERT A. KIMBROUGH JR., Philadelphia.

DANIEL G. MORTON, San Francisco.

PREREQUISITES TO ELIGIBILITY

Each applicant before he may become eligible to receive a certificate.

1. Must have had conferred upon him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

2. Must establish in a manner satisfactory to the Board of Directors that he is a physician duly licensed to practice medicine, and

- (a) That he is of high ethical and professional standing.
- (b) That he has received adequate training in both obstetrics and gynecology as a specialty. Training in one branch only is not acceptable. The term "adequate training" as used here shall be construed as meaning at least six months, full time, in the branch of either obstetrics or gynecology relegated to a minor role in a candidate's training and preference for practice.
3. Must make application for investigation of his credentials and a survey of his character.
4. Must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, except for military duties, having limited for at least

six months before making application. Effective Dec. 31, 1949, candidates will not be accepted who have not been in practice limited to the specialty for a minimum period of at least two years following completion of their specialty training.

5. Must have membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

This board will not accept applicants for examination who are not full citizens of the United States or of Canada, though they be residents of either country. Foreign born applicants must have been certified by either the National Board of Medical Examiners or licensed to practice medicine in the United States or Canada by a state or provincial board of licensure. Notarized statements, not original citizenship papers, must be furnished when the application is filed attesting to the fact of full citizenship in the United States or Canada, if the applicant is foreign born. Further, there will be required a probationary period of at least three years from the date of licensure in the practice of medicine in these countries before such a candidate may be admitted to examination.

The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology, except by special ruling when this is related to active military duty.

This board deprecates engagement in fields of practice other than that in which candidates profess to be specialists. The board does not exclude from examination, however, obstetricians-gynecologists who practice abdominal surgery and urology in the female, as well as breast surgery, because of the correlation of these activities.

Military service or any other similar patriotic service, such as work with Selective Service boards, etc., has not been construed as nonlimitation of practice in violation of the board regulations.

REQUIREMENTS

The requirements for all candidates will be uniform as follows:

1. Completion of at least one year intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association. This need not be a general rotating internship, although this latter is preferred.

The Board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation.

A second year general internship is to be considered as one of a candidate's years of practice. No credit will be given toward special training during a second year general internship.

2. A minimum of seven years of practice after the intern year, including at least three years of residency training in approved institutions, or adequate preceptorship training and including at least six months' post-training practice limited to the specialty. Effective Dec. 31, 1949, this latter requirement shall be increased to two years, at least, post-training practice limited to the specialty.

3. The period of special training should emphasize the relation of the basic sciences, anatomy, pathology, physiology, biochemistry and bacteriology, to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects: viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics, wound healing, etc.

4. Credit for graduate courses in the basic sciences which involve laboratory and didactic teaching rather than clinical experience or opportunities will be given for the time spent up to a maximum period of not more than six months regardless of the duration of the course.

PRECEPTORSHIPS

As a substitute for special residency training, service with a qualified obstetrician/gynecologist preceptor, preferably one who

has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case must be reviewed and decided individually by the Credentials Committee after the application is submitted in the regular manner. The time allowance for this type of training will vary with the amount of work done with the preceptor. It is unusual for more than six months' credit to be given for one year of preceptorship training.

An acceptable preceptor is a specialist in obstetrics and gynecology of long experience, preferably certified by this board. His volume of office and hospital practice must be large enough to offer ample opportunity for the candidate's training. Preceptor training should include participation in procedures of office and hospital practice, including operative and obstetric responsibilities, with adequate time devoted to the studies of basic sciences and pathology and the study of current literature pertaining to this specialty. The preceptor should supervise closely the candidate's work and keep an informative record of the candidate's performance in order to facilitate the board's efforts in evaluating the adequacy of the candidate's training.

APPLICATION AND FEES

Application must be made on a special blank which will be furnished by the secretary's office, 1015 Highland Building, Pittsburgh 6, Pa., and must be forwarded with the other required credentials and the application fee to the secretary's office at least ninety days prior to the scheduled date of the Part I examinations.

The application fee is \$25 and is not returnable.

The examination fee is \$100 and is payable when the candidate is notified of acceptance for examination. This fee is not returnable after the candidate has been officially accepted by the Credentials Committee and notified to report for examination.

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners and associate examiners serve as such without compensation other than actual expenses.

Applicants declared ineligible for admission to examination may request reopening of their applications within two years of the filing date without payment of an additional application fee. When a candidate requests that his application be reopened, he must supply the board with information which may justify such further consideration. A request for the reopening of an application declared ineligible by reason of insufficient training, nonlimitation of practice or similar items may not be made within two years. The request must have adequate supporting evidence to warrant reconsideration. This time may be reduced under exceptional circumstances.

After two ineligibility or postponement rulings on any candidate's application, an entirely new application must be submitted (with or without fee, according to current requirements) in order to bring data down to date. The essential feature of this should be evidence of additional training and experience.

Applicants declared eligible but who fail to exercise the examination privilege within three years of the date of filing the application are required to file a new and current application and to pay a new application fee.

An applicant entering military service during any national emergency and assigned to work in general surgery under conditions acceptable to the Credentials Committee may receive credit up to a maximum of six months acceptable toward his three required years of specialty training. He should specifically request such credit in making his application. The additional time may be applied toward the years of practice requirement.

An applicant serving under military orders in an Army or a Navy hospital in an obstetrical and/or gynecological service under supervision will be given the same credit as if he were working under a preceptor, if these departments are supervised diplomates of this board or recognized obstetricians-gynecologists. He may obtain full residency credit if such hospital is officially approved and listed for residency training in this specialty.

Additional time in military service with any type of general medical assignment may be applied toward the board's years of practice requirement. The Credentials Committee of the board will review and give consideration to each individual case.

Candidates should offer as sponsors or references two diplomates of this board with whom they are presently in contact, rather than men under whom they served as residents only. It is required that sponsors be from the candidate's community and currently acquainted with the candidate and his ability in his practice of the specialty.

Upon notice of acceptance for admission to examination, examination fee is due and also case records, which should be shipped by the candidate to the secretary's office as soon as possible and not later than the date of the Part I written examination.

The candidate should make immediate acknowledgment of his notice of acceptance, at which time he will notify the secretary's office approximately when to expect his case reports.

EXAMINATIONS

Part I examinations are scheduled annually for the first Friday in February. Grades cannot usually be mailed from the secretary's office until after April first following examination. Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination which will be sent out from the board's office under sealed cover.

Special arrangement will be made through senior officers for conducting the written portion of the Part I examination for men in military service. Such candidates are requested to keep the secretary's office informed at all times of changes in their mailing addresses.

All applicants accepted for examination will be required to obtain a passing grade in both the written examination and a review of case reports (Part I), before becoming eligible for the oral-clinical and pathology examinations (Part II). The passing grade for the written examination and case reports is 75 per cent. A candidate whose grade in either or both falls below 75 per cent is conditioned.

Reexamination for the removal of conditions in Part I may be taken after one year but within three years after the first failure, without payment of an additional fee.

Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year.

Candidates appearing for reexamination under a new application after two previous failures will not be required, if they have passed all or part of the Part I examinations on their first application, to repeat such examination items already successfully cleared.

PART I

Examination consists of:

1. A comprehensive written examination, conducted annually, including questions on both obstetrics and gynecology and related basic sciences. The written examination will be limited to a maximum period of three hours.

2. The filing, not later than the date of the written examination, of twenty-five obstetrical and gynecological case reports, in condensed form. Five cases may concern major illnesses, not necessarily operative. All must be of patients for whom the candidate was personally responsible. Grades on case reports submitted for review prior to the written examination will be announced simultaneously with those of the latter; candidates who take the written examination but fail to submit case reports on or before the date of the written examination cannot be given the grade on the latter until their case reports have been received and graded.

PART II

The oral-clinical and pathology examinations given all candidates are conducted by the entire board and the associate examiners usually near the time and place of the annual meeting of one or more of the national societies represented on this board. Advance announcements of examination dates and place will be made in medical journals throughout the country.

Examination consists of:

1. Oral examination before two to four examiners.

An endeavor is made to adapt the details of the oral examination to each candidate's experience and practice. The

examination is particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the related basic sciences, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

2. Pathology examination.

The candidate is expected to identify and to discuss several obstetrical and gynecological pathologic specimens and sections.

Examiners report orally upon each candidate to the assembled board, after which the results of their investigations are considered jointly by the entire board and associate examiners. After a general consideration of the details of the candidate's oral and pathology examinations, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board.

The final action of the board is based upon the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examination.

No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I, but to take a reexamination in the oral-clinical and pathology portions only. One reexamination may be taken within three years of the original examination or first failure without reapplication or payment of an additional fee.

The candidate may reappear at the examination following the one failed by him. In applying for reappearance he should outline additional training or experience acquired in the interim. The board may, at its discretion, deny the candidate the privilege of reexamination.

Failure to exercise the privilege of reexamination within three years entails the filing of a new application with the usual application and examination fees.

After two failures in either Part I or Part II on the first application, the candidate may reapply and be readmitted to examinations once only. Exceptions to this ruling can be made only by action of the entire board in annual session, usually to be based upon evidence of additional training and experience sufficient to warrant such action.

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REQUIREMENTS

All candidates must comply with current board regulations regardless of time of filing application.

The secretary is not permitted to make decisions as to requirements. These rulings are made only by the Committee on Credentials after reviewing the candidate's formal application.

PREREQUISITES

1. High ethical and professional standing.

2. Full citizenship in the country where the candidate practices. (Limited to countries of North and South America, their possessions and territories.)

3. A degree from a medical school of high standing, satisfactory to the board and approved by the Council on Medical

Education and Hospitals of the American Medical Association. An applicant whose training has been received outside of the United States and Canada must present credentials satisfactory to the board and is required to have the certificate of the National Board of Medical Examiners if he has been in practice less than ten years.

4. Completion of an internship of not less than one year in a hospital approved by the same Council.

5. Not less than thirty-six months (a total of sixty months is required of candidates practicing both ophthalmology and otolaryngology) of combined study, training and practice of ophthalmology in approved medical schools, hospitals, clinics, dispensaries, laboratories, preceptorships and private practice.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application forms must be filled out completely and accurately. Letters of endorsement, together with any other required credentials, must be sent to the secretary's office before the deadline date.

2. Fee of \$100 remitted with application.

3. A list of papers or books published.

4. Written qualifying test.

5. Practical examination.

6. Special review of ophthalmic surgery.

7. Membership in the American Medical Association, or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association.

FEES

For written test and original examination, \$100 (as mentioned above).

For reexamination in all subjects, \$75.

For reexamination in one or more subjects, \$35.

Written qualifying test must be taken within three years of date of application. Thereafter new application and fee are required.

The fees have been carefully computed on a basis of cost of examinations, and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

SPECIAL TRAINING

(Applicable so far as practicable after 1948)

This shall include:

1. Graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology, pharmacology, disorders of ocular motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope. Mere factual knowledge is not sufficient; the candidate must have had training in the application of these subjects and in their use in clinical ophthalmology, especially in refraction.

2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board.

These requirements may be met in various ways:

BASIC STUDIES

Anatomy

Embryology and developmental abnormalities

Biochemistry

Pathology

Bacteriology and immunology

Optics and physiological optics

Ocular physiology

Relation of eye to general diseases

Therapeutics and pharmacology

Neuro-ophthalmology

These may be covered by:

A. *Graduate Study*.—By a curricular course in the basic sciences related to ophthalmology in an approved graduate medical school.

B. *Postgraduate Study*.—By courses in individual basic sciences related to ophthalmology as given at various approved institutions. The Home Study Course of the American Academy of Ophthalmology and Otolaryngology is recommended.

C. *Residency*.—By advanced study of these subjects during a residency and by correlation of the principles involved with clinical problems.

D. *Research, Fundamental and Clinical*.—By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic sciences into direct relation with the concrete clinical problem.

CLINICAL EXPERIENCE

A. By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the entire field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B. By residencies in hospitals where regular instruction by lectures and quizzes and seminars is not available. The syllabus issued by the board will guide the resident in his selection of topics to be studied.

C. By fellowships in ophthalmology.

D. By preceptorship with a well-trained and critical ophthalmologist.

E. After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F. *Research under competent critical and sympathetic supervision* will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate basic facts in the intelligent critical way which is expected of the specialist in practice.

G. *The candidate who cannot secure the type of residency he desires* should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves.

WRITTEN QUALIFYING TEST

Before being accepted for examination, candidates are given a written test to ascertain their qualifications. The questions may cover any part of ophthalmology and are especially devoted to the basic studies as listed above. The written test will be given in several principal cities at the same time. Choice of cities is determined largely by the geographical distribution of candidates. Candidates found acceptable will be notified to appear for a subsequent practical and clinical examination in ophthalmology.

EXAMINATIONS

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the board, depending on the number of applications from any region.

The board reserves the right to limit the number of candidates to be admitted to any one examination.

Candidates must be examined in all subjects listed in the sections titled Basic Studies and Practical and Clinical Examination. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

PRACTICAL AND CLINICAL EXAMINATION

The subjects of the practical examination are as follows: (1) External Diseases, (2) Ophthalmoscopy, (3) Histopathology, (4) Refraction, (5) Motility, (6) Ophthalmic Surgery, (7) Perimetry.

1. *External Diseases of the Eye and Adnexa*.—Various methods of examination, diagnoses and treatment.

2. *Ophthalmoscopy*.—Patient will be examined by the candidate and the findings described or drawn. A candidate is required to bring his own ophthalmoscope.

3. *Pathology*.—The candidate will demonstrate familiarity with general clinical pathology as well as the etiology, pathology and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize normal and pathologic histology of the eye.

4. *Refraction*.—A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.

5. *Motility*.—The candidate will demonstrate upon patients his familiarity with routine methods of examination and diagnosis.

6. *Ophthalmic Surgery*.—A candidate will demonstrate his surgical technic upon animal eyes. He must bring his own equipment for performing an extracapsular combined extraction of the lens.

7. *Perimetry*.—The candidate will be given an opportunity to examine patients by use of the arc perimeter, the tangent screen and the stereocampimeter. He may also be required to interpret charted fields.

SPECIAL REVIEW OF SURGICAL CASES

The board now requires of all candidates a list of ophthalmic operations performed within two years prior to examination. This list is to be presented with application.

The operations should be listed in groups of each type of surgery. The numbers of operations in each group must be totaled and the total number of all operations shown. This list must contain the following data:

1. Date.
2. Condition or conditions for which operation was performed.
3. Name and character of operation.
4. Identification by hospital or clinic number, or the name of a consultant or conferee who was present at the time of operation.

Circumstances which prevent any candidate from fulfilling this requirement should be fully explained, with detailed statement of candidate's surgical experience.

REEXAMINATION

Candidates may be reexamined as often as they desire on satisfactory evidence of adequate additional preparation and payment of reexamination fee. A minimum of one year must elapse between examinations when a candidate is conditioned in one or more subjects. A minimum of two years additional preparation is required of candidates who fail in all subjects. The board may, at its discretion, deny the candidate the privilege of reexamination.

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QUALIFICATIONS OF CANDIDATES

There are certain general qualifications applicable to all candidates for examination Part I and Part II. In addition, candidates must have had special training in orthopedic surgery on one of the approved plans hereinafter described:

GENERAL QUALIFICATIONS

- (a) He must be a citizen of the United States or Canada.
- (b) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose

training has been received outside the United States or Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners; he must have engaged in the practice of orthopedic surgery in the United States or Canada for at least three years prior to submission of his application.

(c) He must have served an internship in a general hospital acceptable to this board. Beginning in 1951 and thereafter, applicants for Part I of the examinations must have had a year of resident training in surgery in addition to their internship.

(d) He must be duly authorized to practice medicine in the state or province of his residence.

(e) He must be ethical and have good professional standing.

(f) He must be a member of the American or Canadian Medical Association before he can be declared as eligible for Part II of the examinations.

SPECIAL QUALIFICATIONS

The trainee should realize that preparation for the specialty of orthopedic surgery should include a sound knowledge of anatomy, pathology, physiology, bacteriology and biochemistry, as these basic sciences apply to orthopedic surgery. In addition, he should have observation and first hand experience in the diagnosis, treatment, operative and postoperative care of recent and old fractures and other orthopedic problems of adults and children. However, when so desired, the trainee may substitute additional experience in fractures and adult orthopedics for the work in children's orthopedics as outlined in subsequent paragraphs.

Many hospital services approved for orthopedic training have all phases represented in such proportion that they can be given concurrently over a three year period and provide a well balanced program. Such a plan of training is probably the most desirable. However, it is possible for one to obtain satisfactory training by taking various phases of the work in different institutions (matched training). In order to help the trainee plan a well balanced program of matched training the board suggests that it be arranged as follows: adult orthopedics, one year or one third of the training period; fractures, six months or one sixth; basic sciences, six months or one sixth, and children's orthopedics, one year or one third (as previously indicated a second year of fractures and adult orthopedics may be substituted for the year of children's orthopedics).

The clinical phases of training may be obtained in hospitals or under preceptors where adequate facilities are not available for instruction in the basic sciences. In such cases the trainee should spend at least six months in the graduate department of a medical school which can offer adequate facilities and instruction in these subjects.

Upon completion of a year of internship and a year of resident training in surgery (the latter requirement being applicable to those who apply for Part I of the examinations in 1951 and thereafter), the trainee may take his special work in orthopedic surgery by one of three plans: (1) resident training on an orthopedic service of a hospital approved by the Council on Medical Education and Hospitals; (2) combined resident training and assistantship. (3) preceptorship.

1. *Resident Orthopedic Training*.—The applicant should serve for three years as a resident in orthopedic surgery on services approved by the Council on Medical Education and Hospitals. When taken as matched training, each of the required phases should be taken on a service approved for that particular phase and all phases must be covered. If the trainee elects to substitute additional adult orthopedics and fractures for a year of children's orthopedics, the training that is substituted must be acquired on an approved orthopedic service and the total period of resident training must be three years. The type of credit available in various institutions is indicated by the symbols "A," "C," "F" and "S" in the lists of approved residencies published by the Council on Medical Education and Hospitals.

2. *Combined Resident Training and Assistantship*.—In special instances, with the prior approval of the Committee on Resident Training, the board will recognize for not over two years of

training in orthopedic surgery periods of training in which the candidate combines work as resident on a hospital service, with part time assistantship to an orthopedic surgeon certified by the American Board of Orthopedic Surgery, provided that the major part of his time is spent by the candidate in the hospital service.

3. *Preceptorship*.—In certain instances, the board may recognize training under the preceptorship plan. Before taking training under a preceptor, the applicant must have completed an internship and a year of resident training in surgery. The preceptor must be a diplomate of the board whose clientele is large enough to give the trainee experience in all phases of orthopedic work. The trainee will be required to serve as full time assistant for five years, and during this period the preceptor should devote special periods of time each week, outside of the routine hours employed in the hospital and office practice, to assist the trainee with organized courses of study similar to those covered during resident training. If facilities and instruction in the related basic sciences are not available, the trainee should spend at least six months of this five year period as a student in a recognized graduate medical school where these subjects can be provided. Upon completion of the five years under a preceptor, the trainee should engage in practice, limited to orthopedic surgery, either alone or associated with a diplomate, for a further period of five years, before becoming eligible for Part II of the examinations.

PRACTICE REQUIREMENTS

These requirements are intended not only to test the applicant's determination to practice in an ethical manner and limit his practice to the special field of orthopedic surgery, but also his ability to increase his scientific knowledge. Prior to making application for Part II, applicants who took training as residents on approved orthopedic services should have had at least two years of experience in practice limited to the field of orthopedic surgery. Applicants who had preceptorship training, must have had five years of practice limited to the specialty. Applicants who did not take children's orthopedics, but substituted adult orthopedics and fractures instead, must have limited their practice to the same field in which they were trained.

CREDIT FOR SERVICE WITH THE ARMED FORCES

Because in some instances applicants who served with the armed forces acquired good training in orthopedic surgery, credits up to a maximum of two years may be allowed. Such credit, however, may be granted only on presentation of evidence that such service is, in the opinion of the Committee on Eligibility, equivalent to similar periods of approved resident training. Those requesting credits for training acquired while in the service should submit their completed Record of Professional Assignments with their application.

(a) A year of orthopedic experience with the armed forces, when approved by the committee, may be accepted to replace one of the three required years of orthopedic training.

(b) A second year of orthopedic service with the armed forces may be credited as a year toward the practice requirement.

(c) Credit for military service will be considered for assignments covered between January 1941 and July 1946.

EXAMINATIONS

APPLICATION FOR EXAMINATION

Applications for examinations, Part I and Part II, shall be filed with the secretary upon the prescribed forms and shall be accompanied by the prescribed fees which the board may fix from time to time. The required data shall be entered in type-written form and the application must be accompanied by an unmounted autographed recent photograph of the applicant. The names of two diplomates of the board shall be supplied by the candidate for reference.

The completed application must be filed with the secretary at least sixty days prior to date set for examination.

The data submitted in each application must be checked and verified in the offices of the American Medical Association.

Letters of reference shall be obtained by the secretary from diplomates whose names have been submitted by the applicant. Additional information may be sought from other available sources.

If an application has been approved, the candidate will be notified by the secretary and should then forward the required fee for the examination, Part I or Part II, as the case may be.

EXAMINATIONS

Applicants for certification will be required to take the examination of the Board in two parts. No applicant shall be permitted to take both parts of the examination at the same time, nor can he be permitted to take Part II until he has successfully passed Part I. These may be held in different places and on different dates to meet the needs and convenience of candidates and board members. Announcement of the time and place for examination will be made through the medical journals.

EXAMINATION, PART I

(a) *Eligibility for Examination, Part I*.—Minimum requirements for eligibility for examination, Part I, shall consist of completion of an internship (and a year of resident training in surgery effective for Part I in 1951), followed by at least a year of resident training in orthopedic surgery on an approved service.

Applicants who have completed more than this minimum requirement are eligible for Part I at any time up to completion of their full requirements; however, candidates who are fully qualified must submit application for Part I and successfully pass this examination before submitting application for Part II.

Candidates who make application based on preceptorship training will be considered by the Committee on Eligibility upon completion of an internship and a year of resident training in surgery, followed by five years as a full time assistant under a preceptor who is a diplomate of the board.

(b) *Examination, Part I*.—This part shall consist of a written examination and oral interviews covering those parts of anatomy, pathology, physiology and biochemistry related to surgery and orthopedics. In addition there will be questions on fundamental surgical principles, elementary fractures and orthopedic procedures, history taking and physical examination.

EXAMINATION, PART II

(a) *Eligibility for Examination, Part II*.—Candidates applying for examination, Part II, must have successfully passed Part I and must have completed the prescribed training and practice periods, as defined in Article 7, Section 2.

A separate application for Part II must be completed and forwarded to the secretary, together with the required application fee, at the specified time.

(b) *Examination, Part II*.—This part of the examination will be given in only one city once each year. It will consist of oral quizzes and a written examination covering the advanced work in all phases of orthopedic surgery. The oral examinations will include an interview in anatomy, pathology, fractures, congenital and acquired deformities, static and postural defects and other orthopedic subjects.

(c) Applicants who have qualified with a year of children's orthopedics will have separate written and oral questions related to this phase of orthopedic surgery.

REEXAMINATION

An applicant who fails to pass Part I or Part II of the examinations may be reexamined a second and third time in each part by paying the prescribed examination fee each time he is reexamined. Additional application fees are not required for reexamination. The applicant who fails must appear for his second or third reexamination within three years after the first failure. After three years a new application with the appropriate fee must be submitted.

After three successive failures in Part I or Part II of the examinations the applicant must have had additional graduate training in orthopedic surgery before submitting a new application.

TIMES AND PLACES FOR EXAMINATION

Examination, Part I, will be given probably during May of each year in various centers that will be designated by the board. The secretary will give applicants advance notice of the date, place and hour.

Examination, Part II, will be given in one place and probably not oftener than once each year. As a rule it will be in connection with the meeting of the American Academy of Orthopedic Surgeons and will precede the meeting.

AMERICAN BOARD OF OTOLARYNGOLOGY

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REQUIREMENTS

The following qualifications of candidates for examination are required by the Board:

1. A candidate acceptable for the examination (1) must have been a citizen of the United States (or Dominion of Canada) for at least three years; (2) must have been a graduate for four years or more (five years after 1950) of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association; (3) must have had at least one year's general internship in a hospital approved by the American Medical Association or other nationally recognized organization; (4) must be of good moral character and ethical in his professional relations. Graduates of foreign medical schools should have passed the examination of the National Medical Board. Candidates who have become natural-

ized citizens must give proof of their medical education and graduate training. Candidates from foreign countries must be permanent residents and citizens thereof, and meet the general requirements above.

2. A candidate must be a member of the American Medical Association, the Canadian Medical Association, or other medical societies of equal standing recognized by the Council on Medical Education and Hospitals of the American Medical Association.

3. Each candidate must have had acceptable training and be competent in the applied basic sciences fundamental to the intelligent practice of otolaryngology. Anatomy of the ear, nose, throat, neck, chest, esophagus and nervous systems, pathology, bacteriology, physiology didactic otolaryngology and fundamentals of surgery are required. These requirements may be fulfilled in residency training or in an organized post-graduate course.

4. EFFECTIVE UNTIL 1950—a candidate must have completed two years' residency in otolaryngology or three years' residency in ophthalmoto-otolaryngology and have restricted his practice to otolaryngology (or ophthalmoto-otolaryngology) for a minimum of three years or four years respectively, which may include the period of training.

5. EFFECTIVE UNTIL 1950—five years' practice limited to otolaryngology (or ophthalmoto-otolaryngology) may be accepted in lieu of the requirements in section 4, if the training has been under guidance or preceptorship which meets the approval of the Credentials Committee of the Board.

6. EFFECTIVE AFTER JULY 1, 1950—candidates must have completed a course of three years' study in otolaryngology, or four years' study if ophthalmology is included (in which case there must be a minimum of 50 per cent spent in the study of otolaryngology). The three years may have been spent in a residency which includes study of the basic sciences as specified in section 3, approved by the Board and the Council of Medical Education and Hospitals of the American Medical Association, or the candidate may have completed an organized course in the basic sciences and approved training in a residency which would give a total of three years' study in the specialty. A year's residency in surgery or medicine, or a two years' rotating internship, may be accepted as the equivalent of one year's training in otolaryngology. In addition to the above, the candidate must have had a minimum of one year in practice limited to the specialty.

7. EFFECTIVE AFTER JULY 1, 1950—a candidate, in addition to the requirements in sections 1, 2 and 3, may qualify for examination if he has limited his practice to otolaryngology (or ophthalmoto-otolaryngology) for six years under the supervision and direction of practitioners in the specialty approved by the board, in association with a hospital staff approved by the Council on Medical Education and Hospitals of the American Medical Association.

8. Candidates who cannot meet all the above requirements may be accepted for examination in exceptional circumstances, but only upon the recommendations of the board.

9. A limited certificate in one of the subspecialties of otolaryngology may be issued at the discretion of the board to an exceptionally well qualified individual in the special field in which the certificate is desired.

APPLICATION AND FEES

1. Application must be made in duplicate on special blanks procured from the secretary. The completed application blanks must be returned to the secretary, together with the other required credentials, at least one hundred and twenty days in advance of the examination at which the candidate desires to appear.

2. The applications must be accompanied by two small photographs of the candidate, together with verification of the period of enrolment from the institutions where training in otolaryngology was obtained, and the names of two or more otolaryngologists, preferably diplomates of the board, from the

vicinity of the candidate's place of residency, to be used as references.

3. The fee for the examination is \$100, no part of which is returnable. Of this sum \$25 must accompany the application. No application will be acted upon until the \$25 application fee is received. The balance of the fee—\$75—must be paid to the secretary upon notification that the candidate has been accepted for examination and at least ninety days in advance of the date of examination. A reexamination fee of \$50 is required of candidates conditioned in one or more subjects.

4. The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expense.

5. The application remains valid for three years. An applicant must appear for examination within this time or forfeit the fee.

6. Candidates whose credentials have been found satisfactory and who meet the requirements of the board will be notified ninety days prior to the date of examination. The number of candidates who can be admitted to any one examination is limited. Due to the large number of applications on file, delay in assignment for examination may be inevitable. Appointments will be given in the order applications are accepted.

7. The board, acting as a committee of the whole, reserves the right to reject an applicant for any reason deemed advisable and without stating the same, and the action of the board shall be final.

EXAMINATION

Examination will be held at such time and place as the judgment of the board may dictate. Advance notice of examinations will be given in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* and the several special journals devoted to otolaryngology. So far as is possible these will be held twice a year at, or near, the time and place of meeting of the American Medical Association, or special societies, and of the American Academy of Ophthalmology and Otolaryngology. The examinations cover from two to four days.

Scope.—This examination encompasses all phases of otolaryngology and peroral endoscopy, including faciomaxillary surgery, and surgery of the neck, excluding the thyroid.

The type of examination is as follows:

1. Clinical, covering the actual handling of patients, including history taking, physical and functional examinations, the use of laboratory and x-ray findings and a discussion of differential diagnosis.

2. Didactic, oral examinations covering all phases of otolaryngology.

3. Gross and microscopic pathology.

4. A written examination may be included when the board deems this advisable.

REEXAMINATION

A candidate who is conditioned in examination may be admitted to a subsequent examination after one year and within the three year period dating from his application, upon payment of an additional fee of \$50 and one hundred and twenty days' notice of intention to appear is required.

Candidates who have failed in the examination may be accepted for reexamination upon recommendations of the credentials committee. Satisfactory evidence of further study and progress will be required. A new application must be filed. The fee for reexamination for such candidates is \$100, \$25 of which must accompany the application. The balance of the fee, \$75, will be due upon notification of acceptance.

CERTIFICATION

1. A certificate granted by the board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice otolaryngology, nor does the board intend or attempt in any way to interfere with or limit the professional rights and activities of any duly licensed physician. Its aim is to improve the standards of practice of otolaryngology

and to certify as specialists those who voluntarily comply with its requirements and regulations.

2. The final action of the board is based upon the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examinations.

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A. GENERAL QUALIFICATIONS

1. Satisfactory moral and ethical standing in the profession.

2. License to practice medicine or a certificate of the National Board of Medical Examiners.

3. Membership or associate membership in the American Medical Association or membership in a national society acceptable to the board by citizens of the United States (at present, American Association of Pathologists and Bacteriologists, American Society of Clinical Pathologists, American Medical Association, or American Society for Experimental Pathology). For citizens of other countries, membership in a national medical society of that country is required.

4. The applicant must devote his time primarily and principally to the practice of pathology.

B. PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a medical school in other countries acceptable to the board.

C. SPECIAL TRAINING AND EXPERIENCE

1. The board admits candidates to examinations who are otherwise eligible and who have had either of two types of training and experience.

a. After five years, if four of the five years have been in institutions approved by the Council on Medical Education and Hospitals of the American Medical Association or by the board.

b. After eleven years if none of the training and experience has been in institutions so approved.

2. The specific requirements for those acceptable after five years are as follows:

a. Pathologic anatomy only.

(1) Four years of supervised study and training in an institution approved for residency training in pathologic anatomy by the Council on Medical Education and Hospitals of the American Medical Association or by the board. It is immaterial whether the candidate holds the title of resident or fellow or assistant. Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the pre-clinical departments of a university for one of the four years. In addition, time, not to exceed twelve months, spent in a department of pathology of an approved school of medicine after the completion of the second year of undergraduate study may be counted for full credit toward the four years.

(2) One additional year which may be a continuation of the preceding or may be independent practice of pathologic anatomy in a hospital approved by the American Medical Association or other institutions acceptable to the board.

b. Clinical pathology only.

(1) Four years of supervised study and training in an institution approved for residency training in clinical pathology by

the Council on Medical Education and Hospitals of the American Medical Association or by the board. It is immaterial whether the candidate holds the title of resident or fellow or assistant. Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university, for one of the four years. Candidates, holding also a master's and doctorate degree in a special field of clinical pathology (bacteriology, serology, chemistry, parasitology or hematology) may obtain time credit for not more than twelve to twenty-four months toward the four years for this work regardless of whether it was taken before or after the medical degree. The evaluation of time credit will depend on how much of the broad field of clinical pathology was covered in graduate work.

(2) One additional year which may be a continuation of the preceding or may be independent practice of clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board.

c. Pathologic anatomy and clinical pathology.

(1) Four years of supervised study and training divided as follows:

(a) Two years of supervised study and training in pathologic anatomy as outlined in the preceding paragraph C-2-a-(1).

(b) Two years of supervised study and training in clinical pathology as outlined in the preceding paragraph C-2-b-(1). Candidates declared eligible before July 1, 1952 may at their own election substitute one year (twelve months) of a straight or rotating clinical internship for one year of this special training in clinical pathology. After July 1, 1952, all candidates applying for both pathologic anatomy and clinical pathology will be required to have two years of supervised training in clinical pathology.

(2) One additional year which may be a continuation of the preceding or may be independent practice of both pathologic anatomy and clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board. After July 1, 1952, candidates who elect to claim credit of one year for a clinical internship must take this fifth year as supervised study and training in clinical pathology in institutions approved for residency training in clinical pathology by the Council on Medical Education and Hospitals of the American Medical Association or by the board. Candidates declared eligible after July 1, 1952, who do not take a clinical internship, may, after four years of training as outlined in C-2-c-(1)-(a) and (b), spend the fifth year in independent practice in an institution or laboratory acceptable to the board.

Note.—As outlined in the preceding paragraphs, the total time requirements of the board are unchanged after July 1, 1952, namely, five years of study or practice after graduation from medical school (with exceptions noted in sections C-2-a-(1) and C-2-b-(1)).

3. The specific requirements for those acceptable after eleven years are as follows:

a. The practice of pathology under circumstances acceptable to the board for a period of not less than eleven years. At the election of the candidates, not to exceed one year of straight or rotating clinical internship may be substituted for one of the eleven years. For those candidates in this category who have had some special study and training in pathologic anatomy or clinical pathology acceptable under paragraphs C-2-a, b or c, double time credit will be allowed. Thus, if a person has two years of acceptable supervised study and training, only seven years of practice are required.

D. SPECIAL QUALIFICATIONS

1. Prior to Dec. 31, 1947, the board at its discretion certified candidates without examination, if the following conditions were met as of July 1, 1939:

a. That the candidate has been for a period of five years of professional rank in a department of pathology in an approved medical school; or

b. That the candidate had been practicing pathology for ten years in a senior position in a hospital having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association or in an institution acceptable to the board.

CREDIT FOR MILITARY SERVICE

Credit may be allowed for training and experience in pathology in the federal services during the period July 1, 1940 to June 30, 1947. This credit for training or experience or both is given on an individual basis and will depend upon the opportunity the applicant has had as indicated by his or her medical service record in the specialty of pathology.

After July 1, 1947, credit for those military services will be given on the same basis as it is in civilian institutions, except that the rule in the preceding paragraph will not apply to reserve officers who continue on active duty or are called to active duty after that date.

SUBSPECIALTIES OF PATHOLOGY

(IN FORCE AFTER JULY 1, 1948)

Candidates who have met all general requirements and who have successfully passed the examination in pathologic anatomy and clinical pathology may apply for special designation of a subspecialty of pathologic anatomy or clinical pathology. The board, at its discretion, may approve this application and, after the candidate has successfully passed a prescribed examination, will issue a certificate reading "Pathologic Anatomy (Neuropathology)," "Clinical Pathology (Clinical Bacteriology)," etc.

Candidates who have met all general requirements and who have had five years' special training and experience in a special field of pathology which is acceptable to the board may apply to the board for certification in this special field. The board, at its discretion, may approve this application, and after the candidate has successfully passed a prescribed examination, will issue a certificate reading "Neuropathology," "Clinical Bacteriology," etc.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. Applications cannot be given consideration by the board unless accompanied by the application fee.

The application or examination fee for candidates is \$35. If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years, without additional fee. After two reexaminations, the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The application fee of \$35 has been arrived at after careful consideration and is based on actual estimates of the expenses of examination and administration. None of the board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the Board, his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the same.

EXAMINATIONS

Written and oral examinations will be held at or near the time and place of national medical meetings at the discretion of the board. If a number of applications from any region of the country are received, an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examiners will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis, interpretation and technic. The applicant may apply for certification in either pathologic anatomy or clinical pathology or both.

The examinations in pathologic anatomy consist of a written test, an oral examination on gross pathology and a

practical examination in microscopic pathology. The examination in clinical pathology consists of a written test and an oral and practical examination in the six phases of clinical pathology: bacteriology, hematology, clinical chemistry, parasitology, serology and clinical microscopy.

DEFINITIONS

1. Pathologic anatomy is that branch of pathology which deals with the morphologic aspects of disease, recognition being given that that definition covers two phases of pathology.

(a) The applied phase with special attention to the description and diagnosis of gross and microscopic specimens.

(b) The academic phases of teaching and general morphologic diagnosis.

2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, clinical chemistry, parasitology, hematology, endocrinology and clinical microscopy, the application of the physical and biologic sciences to the diagnosis, prognosis and treatment of disease.

AMERICAN BOARD OF PEDIATRICS

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APPLICANTS FOR CERTIFICATES

Requirements for Applicants.—All candidates for examination for certification must meet the following requirements:

1. Graduate from a Class A medical school.
2. One year's intern service in a recognized hospital.
3. Two years' service in an approved pediatric center.

On May 1, 1946, it was ruled that at least one year of the two years' service in the pediatric center must be in a full time pediatric internship or residency in a recognized institution. Because of the shortage of residencies, the board at this time voted that temporarily the second year of required residency training might be met in various ways.

(a) A full time academic postgraduate course of nine months in an approved pediatric center is credited for one year's work.

(b) Shorter postgraduate courses of three to four months duration must add up to a full time year.

(c) A maximum of three months' credit each is allowed for full time residency type training in allied pediatric subjects, such as pediatric allergy, pediatric psychiatry, pediatric pathology, pediatric cardiology.

(d) A maximum of six months' credit is allowed for residency training in an approved contagious disease hospital.

4. An additional term of two years of specialized study and/or practice. Credit of one year toward this requirement is allowed for military service.

5. Preceptorships are not accepted for credit toward the residency requirement, but are accepted toward the practice requirement.

The board defines service in a pediatric center as full time devoted to rounded experience in an approved hospital which includes ward and outpatient service and both therapeutic and preventive pediatrics. It is expected also, that the service will include adequate graduate training in the basic medical sciences, as well as in the clinical laboratory and public health aspects of the specialty. The time served in pediatric centers need not be continuous or spent in the same institution. The list of hospitals approved for pediatric residency training is published each year

in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (volume 137, pages 69-71 [May 1] 1948). It should be noted that some hospitals are approved for only one year of pediatric training. Careful perusal of the footnotes to the above list will indicate these hospitals. Training credit of only one year can be allowed for service in the hospitals indicated, regardless of its actual duration.

The application fee is \$125 and must be remitted with the application. Refund will be made only if the applicant is refused an examination. Applicants who failed in an examination may apply for a second examination after two years have elapsed and the candidates have presented evidence of continued study and activity in pediatrics. The fee for a second examination is \$75.

Application must be made on special blanks which may be secured from the executive secretary. These must be sent in to the executive secretary at least four months, and preferably six months, before the date on which the candidate would like to be examined. Formal applications will not be accepted until the last year of the final phase of training. Earlier filing of a preliminary information form is encouraged.

Letters from two competent pediatricians recommending each applicant must be sent to the executive secretary of the board. These letters should not accompany the application, but should be sent directly to the executive secretary. No member of the board, or official examiner, may recommend any applicant.

A list of papers or books published must be sent in with the application blanks.

EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Academy of Pediatrics, or at other times and places at the discretion of the board, depending on the number of applicants from any region of the country. It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed on the applicants in meeting the examiners.

The purpose of these examinations is to determine the applicant's competency to practice pediatrics. This board feels that the best impression of an applicant's ability can be obtained by oral examination, although written ones may be submitted at times. However, at the present time this board is also giving a written examination at least six weeks preceding the oral examination. It is not proposed at the present time to require the applicant to send in case reports. The board feels that growth and development are fundamental parts of pediatric training.

INFORMATION ON CERTIFICATION IN ALLERGY

BY

THE AMERICAN BOARD OF PEDIATRICS

The American Board of Pediatrics, Inc., has taken final action, establishing certification in allergy as a subspecialty of pediatrics.

Certification in pediatrics by the American Board of Pediatrics is a prerequisite for such certification in allergy. Those who are already diplomates of the pediatric board and who wish to be certified in allergy must make formal application to the secretary of the American Board of Pediatrics. Those who are not yet certified in pediatrics and who desire certification in allergy as well should indicate this in their application to the board of pediatrics as examination in both subjects may be held at the same time.

The application fee for certification in allergy will be \$25 in addition to the application fee for pediatric certification.

An Advisory Committee of Allergy has been appointed to act with the Board of Pediatrics in all matters pertaining to the selection and examination of applicants for subspecialty certification. This committee is identical with the Advisory Committee on Allergy of the American Board of Internal Medicine.

The Advisory Committee on Allergy has outlined the requirements for applicants who desire examinations in the subspecialty of allergy as follows:

1. Two years, full time, in a satisfactory allergy clinic and its hospital (including training, in both allergy and pediatrics), or

2. One year, full time, in the allergy clinic and its hospital, and two additional years of full attendance on such an allergy clinic and its activities, or

3. Five years, full attendance, on such an allergy clinic and its activities, or

4. Special training under qualified preceptors, solely or in combination with aforementioned types of training, and such other training as might be felt adequate to prepare an individual for the practice of allergy.

It is further the opinion of the committee that clinics for such training should fulfil the following qualifications:

1. They should be in hospitals that have been accepted by the Council on Medical Education and Hospitals of the American Medical Association and by the American Board of Pediatrics for training and certification in pediatrics and for residencies in pediatrics or medicine.

2. The director of the Allergy Clinic shall be a diplomate certified in allergy by the American Board of Internal Medicine, or the American Board of Pediatrics.

When accepted the diplomate will receive from the American Board of Pediatrics a certificate in allergy and will be listed as a specialist in allergy.

Prospective applicants for certification in the subspecialty of allergy may apply to the secretary of the American Board of Pediatrics.

AMERICAN BOARD OF PHYSICAL MEDICINE

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QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

GENERAL QUALIFICATIONS

1. General

A. Satisfactory moral and ethical standing in the profession.

B. Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. (Exceptions to the foregoing qualifications shall be made by the American Board of Physical Medicine for good and sufficient reasons.)

PROFESSIONAL QUALIFICATIONS

2. Professional

A. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.

B. Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same council.

SPECIAL TRAINING

A. A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same council and by the American Board of Physical Medicine as competent to provide a satisfactory training in physical medicine.

B. This period of specialized preparation shall include: (a) graduate training in anatomy (including kinesiology and func-

tional anatomy), physics (including radiation physics, electronics and medical instrumentation), physiology, pathology and other basic sciences which are necessary to the proper understanding of physical medicine; (b) an active experience of not less than two years in hospitals, clinics, dispensaries and diagnostic laboratories recognized by the Council and the American Board of Physical Medicine; (c) the written and oral examinations, given by the American Board of Physical Medicine, shall include questions concerning the basic sciences, clinical practice and laboratory and public health problems as related to physical medicine.

C. An additional period of not less than two years of study and/or practice in physical medicine.

METHOD OF EXAMINATION

Physical medicine includes the diagnosis and treatment of disease by means of physical agents. These physical agents include heat, water, electricity, ultraviolet and infra-red radiation and mechanical devices and agents (such as massage and therapeutic exercise).

Physical medicine has been termed medical applied biophysics. As now practiced, the special field of physical medicine includes (1) the employment of physical agents in diagnosis (as in electrical tests for reaction of degeneration or in the cold pressor test), (2) the employment of physical agents in treatment, (3) occupational therapy and (4) the physical rehabilitation of convalescent and disabled patients.

The physician who specializes in physical medicine must have a thorough knowledge of the basic sciences as related to these subjects as well as clinical practice in the various phases of physical medicine.

Written and oral examinations will be given which will assure the board that the applicant is thoroughly grounded in:

A. The basic sciences including:

(a) Anatomy (including kinesiology and functional anatomy). Because of the importance of proper knowledge of the function of muscles in conjunction with the administration of therapeutic exercise and physical reconditioning of convalescent and disabled patients, the applicant will be carefully examined concerning his knowledge in this field.

(b) Physics (including radiation physics, electronics and instrumentation). Because physical medicine deals largely with the employment of physical agents, in diagnosis and treatment, the applicant will be expected to be well informed concerning the fundamentals of medical physics. He will be expected to be familiar with such subjects as the physics of heat, ultraviolet and infra-red radiation, and electricity (including the physics of low voltage currents and high frequency currents as employed in medicine). Because of the newer developments in medical electronics and medical instrumentation, the applicant will be examined concerning these subjects.

(c) Physiology. The applicant will need to know the fundamentals of physiology, especially the physiology of movement and the physiologic effects of the various physical agents employed in medicine.

(d) Pathology. A basic knowledge of pathology as related to physical medicine will be required and questions dealing with this subject will be included in the examination.

(e) Other fundamental sciences. The applicant will be examined concerning his knowledge of such subjects as biochemistry and bacteriology as related to physical medicine.

B. The clinical aspects of physical medicine including:

(a) Thermotherapy. The various clinical applications of heat and cold both locally and generally should be thoroughly familiar to the applicant.

(b) Hydrotherapy. The methods of employing hydrotherapeutic devices and procedures will be covered in the examination.

(c) Electrotherapy. Questions concerning clinical, diagnostic and therapeutic uses of the constant current, interrupted currents, sinusoidal and high frequency currents will be included in the examination.

(d) Radiation therapy. The applicant will be examined especially concerning the diagnostic and therapeutic uses of ultraviolet and infra-red radiation. (Applicants will not be required

to answer questions concerning the therapeutic applications of roentgen rays and radium which are not included in the field of physical medicine but in the field of radiology.)

(c) Kinesitherapy. Questions concerning the clinical uses of therapeutic exercise and massage will be included in the examination.

(f) Occupational therapy. The applicant will be expected to answer questions concerning the indications for, and clinical applications of, various types of occupational therapy.

(g) Physical rehabilitation. Because of the importance of the understanding of the philosophy of convalescent reconditioning and rehabilitation of the seriously disabled person, the applicant will be expected to have a thorough knowledge of the modern developments in these phases of physical medicine.

APPLICATION

The application form shall contain a record of the candidate's premedical and medical training as well as of internships, graduate study, hospital and dispensary staff appointments, teaching positions, membership in medical societies, medical papers published, and the names of three well known physicians to whom the board may write for professional and character references.

The application shall also be accompanied by one recent, signed photograph of the candidate mounted on the application and the registration and examination fee of twenty-five dollars which fee will cover both the written and oral examinations. (In case of rejection of application, this fee will be refunded with the exception of ten dollars, which will be considered as a registration fee). An additional fee of fifty dollars will be required when the certificate is issued.

AMERICAN BOARD OF PLASTIC SURGERY

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GENERAL ELIGIBILITY REQUIREMENTS

1. Moral and ethical standing in the profession satisfactory to the board. The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

2. Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

3. Those whose activities are limited to the practice of plastic surgery.

4. This board will accept as applicants for examination only those who are full citizens of the United States or Canada. Notarized statements, not original citizenship papers, attesting to the fact of full citizenship in the United States or Canada must be furnished by foreign born applicants when the application is filed. Such candidates must have at least two years of practice in plastic surgery in North America after completing the training required by the board.

PROFESSIONAL REQUIREMENTS FOR QUALIFICATION

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school considered acceptable by this board.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or what would constitute in the opinion of the board the equivalent of such training.

3. Graduate study in general surgery for a period of not less than two years beyond the intern year, to be taken in an approved graduate school or hospital.

4. Graduate study in plastic surgery in an approved residency or preceptorship for an additional period of not less than two years, to be taken in an approved graduate school or hospital, or under auspices satisfactory to this board.

5. An additional period of not less than two years of practice in plastic surgery.

The above training may be taken in a recognized graduate school of medicine, or a resident in surgery and in plastic surgery in an acceptable hospital,¹ or under a sponsorship accredited by the American Board of Plastic Surgery for such training. By the latter statement it is meant that one may secure the necessary and specified training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered.

The period of special training should emphasize the relation of the basic sciences—*anatomy, pathology, physiology, biochemistry and bacteriology*—to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects: viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics, wound healing, etc.

Because of vagaries of training, such as changes from one specialty to another, interims of military duty and other service to the country, the aptitude and skill of candidates, the board may, at its discretion, review and make recommendations for or against certification of certain applicants outside of the listed qualifications and requirements.

The board reserves the privilege of requesting lists of operations done solely by the candidate for one or more years, or of requesting special and extra examinations, written, oral or practical, and of requesting any specific data concerning the candidate that may be deemed advisable before making final decision for certification.

Eligibility rulings or an evaluation of a candidate's qualifications cannot be made by the secretary or by any one member of the board. These are made only by the entire board upon recommendation of the Committee on Credentials and Requirements after a review of the candidate's formal application for such rulings.

MILITARY CREDIT

Credit for military service is given on an individual basis, each case being considered on its own merits and the amount of credit given being determined by the board when the information is submitted with the application.

CASE REPORTS

Candidates whose general eligibility and professional requirements are found satisfactory shall be required to submit twenty-five diversified case reports, together with photographs, to the secretary of the board. This group of case reports must include a variety of material from the entire body rather than a number of cases of one type, and should carry the candidate's personal deductions, conclusions and comments and should be sufficiently detailed to show if the conclusions drawn indicate a grasp of the subject and if the results justify the procedure.

1. An acceptable residency is one which has been approved by the Council on Medical Education and Hospitals of the American Medical Association jointly with this Board.

Each case report should be typewritten on paper approximately 8½ by 11 inches, separately numbered and paged, with the candidate's name on each page. Each report should be individually assembled and held by removable fasteners and should have a cover sheet with the candidate's name, the number of the case, hospital number, diagnosis and a brief summary of the case (not over 100 lines). The case reports, photographs and other data are to be filed with the permanent records of the board. Cases should be chosen from the private practice of the candidate or from the hospital or clinic service. Identification numbers of cases presented are required. The initials, color, age and occupation of each patient should be stated as should the name of the hospital where treated and dates of admission, operation and discharge. The important details of family history, if relevant, and of the previous history should be given. The history of the condition for which the candidate was consulted should be stated clearly and concisely, indicating previous treatment, if any, and the mental, social or economic factors involved. The physical examination of the patient with special reference to the existing deformities should be carefully described. All laboratory and other special examinations, such as roentgenograms, which were made, should be reported, with a statement of what was determined by them. The indications for operation and for the type of operation employed should be given: the preliminary treatment and the type of anesthesia used should be stated. A full description of the operative technic with methods of hemostasis, suture and drainage, if any, and the name of the assistant should be given. The early and late postoperative course and results should be described.

Photographs of conditions and drawings of operative technic, illustrative of each case, should be included and securely attached to each case report, with the name of the candidate and the number of the case indicated. All photographs should be made by a sharp focus lens from untouched negatives with identical lighting conditions, exposure and developing, and should show conditions before and after operations with clear detail.

If the case reports (and lists of operations when requested) are approved, the candidate will receive subsequent information regarding taking the examinations.

The board at its discretion may request certification of case reports by the hospital where the operations were performed. The following form should accompany the case reports: "I hereby certify that the planning and essential surgical procedures described herein were carried out by me as an independent operator."

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his ability.

EXAMINATIONS

The qualifying examinations will be divided into Part I, Written, and Part II, Oral and Practical (and written if deemed necessary).

Part I shall consist of a written examination prepared by the Examination Committee upon questions which concern the fundamental surgical principles as applied to plastic surgery. It shall be given under the supervision of a diplomate of one of the surgical specialty boards, preferably of the American Board of Plastic Surgery. The questions shall be given under the following headings: (1) theory and practice of plastic surgery; (2) applied anatomy, applied physiology; (3) pathology, bacteriology, clinical laboratory methods (pharmacology); (4) local and general anesthesia, shock and hemorrhage; (5) handling of tissues, wound healing, surgical accidents. To be considered as passing, the candidate shall be required to receive a grade of 65 per cent in each portion of the written examination and an average grade of 75 per cent on the entire written examination.

Part II: In order to be eligible for Part II of the examination, a candidate must have fulfilled the board's requirements as to preliminary training in and practice of plastic surgery, and must have successfully passed (a) the Part I, written,

examination of the Board or (b) have been certified by the American Board of Surgery with two to four extra years of accredited training in plastic surgery.

Part II shall, as far as possible, be of a practical nature, and shall be conducted in the candidate's locality by no fewer than two competent examiners selected by the board.

The clinical examination shall include any or all of the following: (1) the exhibition of patients who have undergone or who are undergoing treatment by the candidate; (2) examination, diagnosis and presentation of a plan of correction by the candidate of cases provided by the examiners; (3) oral examination of the candidate and observations made in the operating room, treatment rooms, and wards; (4) a written examination concerning plastic surgery may be given to correlate the clinical evaluation.

For those certified by the American Board of Surgery and excused from taking Part I of the examination in lieu of this certification, an oral or written examination on fundamental surgical principles as applied to plastic surgery will be given in the Part II examination.

REEXAMINATIONS

Candidates who have failed in the Part I or Part II examination may be admitted to another examination after one, two or three years have elapsed, except in such case as the board may for good and sufficient reason deny a candidate the privilege of reexamination. The candidate must give sixty days' notice requesting reexamination and pay a fee of \$25 for each reexamination in Part I and \$50 for each reexamination in Part II. The examiners conducting the first examination of a candidate will not be eligible to conduct the reexamination.

FEES

The fee for application and examination is \$100; of this sum, \$25 must accompany the application. The remaining \$75 must be paid when the candidate is notified of acceptance for examination. There will be no refunds. This fee may be increased at the discretion of the board.

The Board is a nonprofit organization. The fees of candidates are used solely for defraying the actual expenses of the board.

Because of the limited number of surgeons certified by this board it is necessary for a while to request \$10 annually from diplomates, after the first year's certification, to defray expenses of the board.

CERTIFICATION

It is the board's prerogative to determine the fitness professionally and ethically of any candidate for its certificate, and the action or decision of the American Board of Plastic Surgery regarding the certification of any candidate shall be final.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY

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LOUIS J. KARNOSH, Cleveland.
ROLAND MACKAY, Chicago.
GEORGE H. STEVENSON, London, Ontario.
A. R. VONDERAHE, Cincinnati.

APPLICATION FOR CERTIFICATES

An application, in order to be considered at any meeting of the board, must be in the hands of the secretary of the board not less than ninety days before the date of such meeting. A

proper application form may be obtained from the secretary. Application may be made for certification in psychiatry or in neurology or in both fields. Applications will be formally considered only when made on the official application blank in such form as may be adopted from time to time by the board and when accompanied by an application fee in such amount as may be fixed by the board.

The secretary of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire board at a meeting held for such certification.

FORM OF CERTIFICATION

There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certifications shall be in such form as is approved by the Board of Directors.

GENERAL REQUIREMENTS FOR APPLICANTS

Each applicant for a certificate must establish that—

(a) He is a physician duly licensed by law to practice medicine.

(b) He is of high ethical and professional standing.

(c) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association. Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons.

(d) He has received adequate training in psychiatry or neurology, or both, as a specialty.

CLASSES OF APPLICANTS

Class A.—Applicants who graduated from medical school before the foundation of the board (1934) will not be held to the strict interpretation of the published requirements in formal graduate training. Under such circumstances the board will consider the training and experience of the applicant and decide whether or not he will be admitted to the examination.

Class B.—Candidates graduated from a medical school after 1934 shall fulfil the following requirements.

PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States and Canada, his credentials must be satisfactory to the aforementioned Council and the Advisory Board for medical specialties.

2. Completion of a year's internship approved by the same Council in general medicine, general surgery, pediatrics or a rotating internship.

3. The nine months' wartime internships, assistant residencies or residencies will be accepted as an equivalent of one year.

SPECIAL TRAINING

(These requirements will be rigidly enforced after Jan. 1, 1948).

Admission to the examination for certification in psychiatry or neurology requires a total experience of not less than five years.

There shall be a period of three years of full time study in institutions recognized by the Council on Medical Education

and Hospitals of the American Medical Association, and approved by this board as competent to provide training in psychiatry or neurology. A candidate may submit to the board evidence of special training in psychiatry or neurology not covered in these specifications for its evaluation and approval.

In addition to these three years of training under supervision, each candidate should have two years of clinical practice with major responsibility for the care of patients.

This training for psychiatrists should include clinical work with psychoneurotic and psychotic patients, combined with the study of basic psychiatric sciences, medical and social psychology, psychopathology, psychotherapy and the physiological therapies, including a basic knowledge of the form, function and pertinent pathology of the nervous system. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training period should include instruction in the psychiatric aspects of general medical and surgical conditions and the behavior disorders of children and adolescents sufficient to develop practical ability to direct the treatment of such conditions. It should also include collaborative work with social workers, clinical psychologists, courts and other social agencies. The training program of the candidate for certification in psychiatry should include sufficient training in neurology to recognize and to evaluate the evidences of organic neurological disease.

The training for neurologists should be based on clinical work with adults and children with neurological disorders, including the neurological complications of medical and surgical conditions. This shall be combined with study of basic neurological sciences, neuroanatomy, neurophysiology, neuropathology and neurooentogenology. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training should include sufficient psychiatry to enable the candidate to recognize and evaluate the common psychiatric reactions.

Candidates seeking certification in both neurology and psychiatry or supplementary certification in one after being certified in the other, must submit evidence satisfactory to the board of an additional two years of full time basic training in the supplementary specialty.

Thus, no candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least seven years of training and experience for certification in both neurology and psychiatry.

TRAINING IN THE ARMED FORCES

Credit will be granted for one year of wartime service in the Army, Navy, Public Health Service and Veterans Administration. Further credit for basic training will be granted only if the training has been received in an institution recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by this board. Time beyond one year spent in the above Government agencies may be credited to experience, providing the candidate has been regularly assigned to a service in neurology or psychiatry.

EXAMINATIONS

Date and places of examinations are set by the board at its discretion and are announced in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Diseases*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the competence of the candidates. There will be separate examinations for certification in psychiatry and in neurology. The board requires some proficiency in neurology on the part of those it certifies in psychiatry and vice versa, but examines the candidate in accordance with the certificate he seeks. The examinations will be of such type that no adequately trained individual will

fail; yet they will be sufficiently searching so that the specialist in fact may be separated from the specialist in name. The practical examination will include the examination of patients under the supervision of the examiner. The manner of examining patients, and the reasoning and deductions therefrom, will constitute an important part of the examination. Oral and practical examinations will be given in the basic sciences with special regard to their clinical implications.

PAYMENT OF FEES

The candidate upon filing his application shall accompany it with an application fee of \$25 which is not returnable. When notified by the secretary that he is eligible for examination, he shall send the secretary an examination fee of \$25 for examination in either psychiatry or neurology. There will be separate examinations in psychiatry and in neurology. Should the applicant desire examination in both at one meeting of the board, he shall send an examination fee of \$50. A candidate who has failed in one examination is eligible for reexamination within three years upon payment of a reexamination fee of \$25. A candidate who has been conditioned in one examination is eligible for reexamination within three years upon payment of a reexamination fee of \$10. A candidate who has been certified in either psychiatry or neurology, and who has been admitted to the supplementary examination for the other certificate, shall pay an additional examination fee of \$25. The candidate who has failed twice, or one who does not apply for reexamination within three years, will be considered a new applicant.

AMERICAN BOARD OF RADIOLOGY

E. L. JENKINSON, President, Chicago.
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CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges or license to practice radiology. Certificates of the board shall be issued upon one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.
2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (a) roentgenology; (b) diagnostic roentgenology; (c) therapeutic radiology.

DEFINITIONS

For the purposes of this Board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.
2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.

3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.

4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL REQUIREMENTS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

A. GENERAL QUALIFICATIONS

1. Satisfactory moral and ethical standing in the profession.
2. A license to practice medicine in the state or county in which he resides.
3. Membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as herein provided, membership in other societies shall not be required.
4. That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under "definitions," and that he devotes his time primarily and principally (at least 75 per cent) to the practice of radiology or one of its branches.
5. That he is a citizen of the United States or Canada. Candidates from other countries must be permanent residents of that country and native citizens thereof.

B. GENERAL PROFESSIONAL EDUCATION

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. If the applicant is a resident of the United States or one of its possessions and is a graduate of a medical school outside the United States or Canada, he must have a certificate of the National Board of Medical Examiners.
2. Completion of an internship of not less than one year in a hospital approved by the same Council.

C. SPECIAL TRAINING

(Applicable to candidates who begin their training on or after Jan. 1, 1942, and to all candidates examined after Jan. 1, 1945.)

1. After completion of the internship there shall be a period of special training in Radiology of not less than three years in clinics, hospitals or dispensaries recognized and approved by The American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in radiology. This period of specialized training shall include:

(a) Graduate training in pathology, radiation physics and radiobiology. A period of six months full time training in pathologic anatomy is recommended but, where this is not possible to arrange, the student during his three year training period may, by attending pathologic conferences, postmortem examinations and studying removed tissues, receive adequate training in pathology. It is recommended that radiation physics be taught by a combination of didactic lectures, practical examples and direct clinical demonstrations.

(b) An active experience (residency) of not less than twenty-four months in an institution, the radiologic department of which is recognized and approved by The American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as capable of providing satisfactory training.

(c) Examination in the basic sciences of radiology as well as the clinical aspects thereof. These examinations should be given by the student's instructors in order to allow those responsible for his training to certify to the board that he is adequately prepared.

In the current emergency the Board will allow one year of military service spent in a radiology department in the

United States Army, Navy or Marine Corps to be applied toward the satisfaction of one year of graduate training.

At its annual meeting in Chicago in June 1948 the board decided to grant credit for preceptor type training provided the candidate first spends two years in an approved x-ray department on a formal residency basis. Then the board will give credit for two years' preceptorship in lieu of the third year of residency training provided the preceptor is acceptable to the board. This program is now in effect.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies and his local and general reputation.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs and the fee of \$50 at least two months before the date of the examination.

FEE

A fee of \$50 must accompany each application blank. This fee will not be returned, and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in the first examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination, and pay an additional fee of \$25. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$50.

A candidate having failed twice may, after one year has elapsed, file a new application which must be accompanied by the fee of \$50.

AMERICAN BOARD OF SURGERY

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The American Board of Surgery has recorded and clarified its requirements for eligibility for examination. The requirements have been modified for those who will begin their surgical training July 1, 1950, after one year's internship. For those whose surgical training, after one year's internship, has begun or will begin prior to July 1, 1950, the requirements are unchanged. A new booklet of information will be issued by the board early in the Fall. Full information may be obtained by writing to the board's office: Dr. J. Stewart Rodman, Secretary, 225 S. 15th Street, Philadelphia 2, Pa.

AMERICAN BOARD OF UROLOGY

GILBERT J. THOMAS, President, Beverly Hills, Calif.
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GRAYSON CARROLL, St. Louis.

APPLICATION BLANK; REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special form. This will be provided by the secretary and must be returned to him accompanied by other required data and credentials, and by \$35 of the examination fee.

Requirements for Applicants (Section 2, of the By-Laws of the American Board of Urology, Inc.).—Each applicant, before he shall become eligible to take the examination for certification in urology, must:

A. Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association and must have completed an internship of not less than one year in a hospital approved by the same council. (The former requirement is not applicable to a candidate who graduated from an institution now extinct or whose graduation occurred before the American Medical Association had prepared a list of accredited medical schools.) All graduates of foreign medical schools must obtain a license in the state in which they propose to practice medicine and the certificate of the National Board of Medical Examiners before making application for certification.

B. Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology.

The board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression "special training in urology" may be interpreted to include:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals.

of the American Medical Association as competent to provide a satisfactory training in the special field of urology.

This period of specialized preparation should include: (a) graduate training in anatomy, physiology, pathology and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty of urology; (b) an active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the diagnosis and treatment of urological conditions; (c) examinations in the medical sciences basic to the specialty of urology, as well as in the clinical, laboratory and public health aspects.

2. An additional period of not less than two years in the practice of urology in the city from which he makes application.

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association.

C. Make application to The American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character.

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged.

E. Membership in the American Medical Association or comparable national medical association is recommended.

FEE

The examination fee is \$100 (this fee will be increased when the expense of the examinations and other activities of the board demand). Thirty-five dollars must accompany the application. If, upon investigation, an applicant is found lacking in any of the requirements stated above, he will be notified that he is ineligible for examination. Sixty-five dollars must be paid when the applicant is accepted as a candidate for certification. Neither fee shall be returnable in any event.

If a candidate fails, he will be permitted a second examination after one year or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application and pay a second fee.

REQUIREMENTS FOR CERTIFICATION

According to the by-laws of the American Board of Urology, Inc., applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary.

The requirements for certification include: personal appearance before the board; preparation of reports of fifty major urological cases, under the candidate's own supervision, which must contain all items essential for diagnosis, therapy, prognosis, results of treatment, etc.; oral-clinical examinations, and written examinations.

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board.

EXAMINATIONS; REPORTS OF CASE HISTORIES

The board will hold one examination per year. This may be held in association with the annual meetings of the American Urological Association or the American Medical Association, when this is practicable, or at other times and places that the board may select, or deem expedient.

The written examinations are designed to test the candidate's preparation in, and his knowledge of, the whole field of urology including the fundamental subjects: pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology. These may be given at the time of the oral-clinical examination or may be held on certain dates simultaneously in different parts of the country at places convenient for candidates. The examination in pathology will consist of the identification of gross specimens and sections of tissue

observed through the microscope. The examination in anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology.

The oral-clinical examination will consist of discussions of common urological conditions. The subjects forming the basis of this examination are urography; diseases of the genital organs, including the prostate; diseases of the urinary bladder and diseases of the ureters and kidneys. The examination may deal directly with data found in the reports of case histories that the candidates have submitted. It will ascertain the candidate's familiarity with recent literature, the breadth of his clinical experience and his general qualifications for practice in the specialty of urology.

The professional adaptability of each candidate will be investigated in an attempt to determine his ethical conduct and his attitude toward his patients and fellow practitioners.

The reports of 50 major urological cases must be consecutive and must have been under the candidate's own supervision. They must not be abstracted. Sufficient data should appear in these so the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made.

Case reports that are copied verbatim from a hospital record are not accepted. They must be identified by the name of the hospital and the case admission numbers, with the pertinent dates. The reports must be typewritten on 8½ by 11 paper and in duplicate, but need not be on any special forms.

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and treatment prescribed.

The board requires that all of the essential points of the history and examination, as well as a complete description of the surgical procedure, shall be given. Emphasis should be placed on the following items: preoperative diagnosis, clinical and pathological diagnosis, laboratory data, including cultures of urine and chemical analysis of calculi; summary of post-operative course with special reference to morbidity, clinical findings at time of discharge from the hospital and subsequent "follow-up" reports.

A final short paragraph must be prepared for each case. This must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists must accompany the reports. If the reports are obtained from more than one hospital they must be consecutive and a separate index list of each group should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number and the dates of operation. Statements from the superintendents of the hospitals attesting that the candidate was the operator must be included. The lists will be filed in the secretary's office for verification purposes.

Each candidate must assume personal responsibility for the data in his case reports, including autopsy findings and interpretation of urograms.

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his competence as an urologist.

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination. If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others.

Case reports must be submitted to the secretary of the board at least ninety days before the time set for the oral-clinical examination.

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SATURDAY, SEPTEMBER 4, 1948

THE FORTY-EIGHTH ANNUAL REPORT ON MEDICAL EDUCATION

This issue of THE JOURNAL contains the forty-eighth annual report of the Council on Medical Education and Hospitals. In addition to providing detailed statistics and information for the year 1947-1948 on medical education in the United States and Canada, the report comments on a number of important developments related to medical education.

One of the most troublesome problems for medical schools today is the question of enrolments. Since the end of World War II the medical schools have been confronted with numerous appeals to increase their enrolments. The current report of the Council discusses the more important factors that prevent the schools from accepting more students. The most common limiting factor is the lack of personnel and facilities for training more students in the preclinical subjects. Sixty-six of the seventy approved medical schools in the United States have stated that they cannot admit more students with their present facilities for instruction in the preclinical departments. Thirty-seven of these schools have indicated that to admit more students an expansion of their clinical facilities would also be necessary, as have the four schools that did not report a need for additional preclinical facilities. The report discusses the many problems involved in expanding a medical school. Expansion requires much more than providing additional classroom space. Additions to laboratories and hospitals and the expansion of libraries, administrative offices and other central departments would also be necessary. The satisfactory integration of new facilities with existing facilities would present a serious problem for a number of schools. The shortage of teaching personnel as a result of the failure to train sufficient teachers during the war creates a real difficulty for all medical schools considering expansion. It should be clear from the Council's report that the problem of increasing enrolments is not simple and that no school is likely to undertake to expand its facilities unless the need is unmistakably clear and sufficient financial support to meet the expense is assured.

For the second successive year the states without medical schools sent a smaller proportion of their population to medical schools than did states with such schools. If this trend continues, as it seems likely to for the next few years, states without medical schools will undoubtedly give serious thought to establishing schools of their own or to contributing to the support of an established medical school in return for the guarantee that the school will accept a certain number of qualified applicants from the state. For several states that do not have the resources or clinical facilities to maintain a satisfactory medical school, such a plan of regional support would appear to be the most satisfactory solution.

Women comprised 9.5 per cent of all medical students in the United States during 1947-1948. This is the highest proportion of women students ever recorded. However, the percentage of women in the freshman class declined from 11.1 per cent in the preceding year to 7.9 per cent.

The enrolment of veterans in the medical schools and schools of the basic medical sciences in the United States increased from 55.6 per cent in 1946-1947 to 60.9 per cent in 1947-1948. The 1947 freshman class probably represents the peak in the admission of veterans of World War II to medical schools. Veterans numbered 73.4 per cent of the students in this class. Preliminary estimates of the composition of the 1948 freshman class indicate that about 68 per cent of the students will be veterans.

FINANCIAL SUPPORT OF MEDICAL SCHOOLS

For the school year 1948-1949 the budgets of the medical schools total \$51,000,000, which is an increase of \$8,000,000 over the total for the year 1947-1948. More than \$6,000,000 of the increase can be considered as representing additional funds available to medical schools. The balance is accounted for by differences in the methods of computing the budgets for the two periods in question. Despite the increase in funds, the need for additional financial support continues to be one of the most important problems facing the medical schools. To stabilize their present programs and undertake essential new developments, the schools estimate that they will require additional operating funds totaling about \$15,000,000 annually.

Until recent years, the financial problems of medical schools have been given little publicity. It is doubtful that either the public or the medical profession have fully realized that tuition covers only a fraction of the cost of educating a medical student and that the high quality of medical education in the United States has been made possible only by the support which medical schools have received through endowments, gifts, university funds and state and municipal tax sources.

While medical schools have been forced to increase tuition fees in recent years, student fees will still provide only 25 per cent of the cost of operating the medical schools in 1948-1949. The average annual tuition fee during the coming year will be \$513. Tuition probably cannot be raised substantially beyond this figure without barring from medical school all but the sons and daughters of the well-to-do. Medical schools cannot pass on to the student the full cost of an education which averages more than \$2,200 a year.

Medical schools apparently must turn increasingly to the public for support. The question that remains is whether the public will provide this support voluntarily or whether it will have to be provided by direct federal subsidy. With the latter solution appears the possibility that the direction and control of medical education might pass from the hands of medical educators and the medical profession. A prominent educator has pointed out the danger that federal support could lead to the disappearance of initiative and enterprise on the part of the individual schools and could also reduce the schools to "a dead level of uniformity." There is a growing conviction that before federal aid for medical schools is sought an intense effort should be made to secure additional funds from voluntary sources and local units of government. The public has been generous in supporting other medical activities and additional support should be forthcoming if the public can be fully informed of the needs of medical schools.

Most physicians probably would not favor federal subsidies for the basic support of medical education except as a last resort. Since many physicians now in practice are indebted to their medical schools for a part of the cost of their medical education, medical schools should receive the full cooperation of the profession in interesting the public in this financial problem and also in contributing generously to alumni funds.

PREMEDICAL EDUCATION

The development of medical education during the last forty years has been accompanied by significant advances in premedical education. As the medical school course has become more complex and intensive, it has become essential that students entering the study of medicine possess a basic knowledge of the natural and physical sciences and an understanding of scientific method; it is equally important that they have acquired mature habits of study. Medical schools today have no place for the student who cannot apply himself effectively to his work from the outset of his career in medical school.

Thirty-five years ago, a student could enter medical school in this country on graduation from high school, and some medical schools did not then insist on the strict fulfilment of this requirement. In 1914, the Council on Medical Education and Hospitals stipulated that approved medical schools require candidates for

admission to have had one year of college work; in 1918 this requirement was increased to two years. Since 1938 the Council has recommended a minimum of three years of college training. At present seventy-five of the eighty-seven medical schools and schools of the basic medical sciences in this country and Canada require at least three years of premedical work.

In recent years the attention of medical educators has been directed more to improving the quality than increasing the duration of premedical education. Traditionally premedical students have taken a preponderance of scientific courses. The extent to which this practice prevails is shown by Vaughn's¹ analysis of the major subjects and fields of undergraduate study of the 13,407 applicants to medical colleges who took the professional aptitude test of the Association of American Medical Colleges. This group included at least two thirds of the applicants for admission to medical schools in the fall of 1947. The analysis showed that 44 per cent of the students majored in biologic sciences, 26.4 per cent in chemistry, 11.3 per cent in premedicine, 6 per cent in other science curriculums, 2.8 per cent in psychology and only 3.8 per cent in the humanities and social sciences. For 5.7 per cent of the group the field of concentration was unclassified.

These figures reveal that the advice of medical educators that students intending to study medicine acquire a broad cultural background has largely gone unheeded. It would appear that premedical students either have not heard or have not given credence to the statements of the medical schools that in passing on a candidate for admission they are more interested in the quality than quantity of the work which he has done in scientific courses. Another explanation may lie in the feeling of premedical students that they will encounter less difficulty in medical school if they have taken a large number of scientific courses in college. For the student with borderline ability there may be some basis for this belief. It is doubtful whether it holds for the average student.

If physicians are to assume successfully the positions of leadership in the community for which their professional training qualifies them and if they are to guide intelligently the future development of their own profession in a changing society, it is essential that their knowledge should not be limited to the fields of science. Once the student enters medical school, and for many years after graduation, his time and energies are almost entirely taken up with professional studies and activities. There is little likelihood that this practice will change. Therefore, if a physician is to have a knowledge of history, literature, philosophy, political science, economics and sociology, his background in these subjects must be acquired during his undergraduate years. Medical educators are convinced of the soundness and desirability of that program.

1. Vaughn, K. W.: *Performance on the 1947 Professional Aptitude Test*, New York, Graduate Record Office, 1947.

DEFERMENT OF MEDICAL AND PREMEDICAL STUDENTS

The Selective Service Act of 1948 renders liable for service in the armed forces men between 19 and 25 years of age, the age group from which the great majority of premedical and medical students are drawn. Fortunately the Act contains a provision which makes possible the deferment of medical and premedical students under rules and regulations which the President may prescribe.

There does not seem to be any question that the deferment of medical students and physicians in their first year of internship will be authorized. Selective Service officials have indicated that they recognize the importance of allowing a sufficient number of students to continue their premedical education so that the number of students and graduates will not be reduced in the years ahead. Representatives of the Selective Service System have conferred with those of the health professions on a plan for deferring preprofessional students. While the plan that will finally be adopted has not yet been announced, it seems probable that satisfactory provisions will be made for deferring an adequate number of premedical students.

The importance of such a provision cannot be overestimated. The present Selective Service Act affects students who would in the normal course of events be entering medical school as late as the fall of 1953. Its effect on the production of physicians may thus be felt as far in the future as 1957. While veterans and others not liable for military service under the Selective Service Act now comprise a high proportion of the students in medical schools, during the next several years the schools will have to draw more and more of their students from the group liable for military service.

During the latter years of World War II no provision was made for deferring premedical students. When the Army curtailed its training program in medical schools in 1944, the schools were unable to fill all the available places in the entering class for 1945. A decrease in enrolments occurred that was kept from progressing to serious proportions the next year only by the unexpectedly early termination of the war. In the interest of the nation's health and safety, the possibility of such an eventuality cannot be allowed to occur again.

Of great importance to medical education also is the assurance of a continuing supply of trained teachers and investigators in the basic medical sciences. One of the major obstacles at present to expanding the facilities for medical education in this country is the lack of trained teachers which resulted from the almost complete cessation of graduate study during the war. At least another five years will be required to make up the deficiency of teachers. It is important, therefore, that the Selective Service System also make provisions for the deferment of an adequate number of graduate students in the basic medical sciences.

Current Comment

THE CONTINUING EDUCATION OF PHYSICIANS

In the report of the Council on Medical Education and Hospitals in this issue of *THE JOURNAL*, the total recorded attendance at refresher and continuation courses in the United States during the twelve month period July 1, 1947 to June 30, 1948 was reported to be 82,803. This figure, which does not include the attendance at 114 courses for which no attendance records were submitted, represents more than 40 per cent of the total number of living physicians in the United States. Figures for the total attendance at scientific meetings of the American Medical Association, state medical societies, county medical societies and the many special medical societies, if compiled, would furnish additional impressive evidence of the extent to which the physicians of this country voluntarily continue their education after graduation from medical school. Even these figures would not give the entire record, since they would not measure the continuing education that physicians obtain from the study of medical journals and books. Postgraduate and continuation courses were popular even before the war. After a temporary decline during the war years, the number of courses offered and the attendance have been increasing each year. It seems certain that this form of continuing education will remain one of the important methods by which physicians will fulfil their obligations to their patients of keeping abreast of advances in medical science.

RHEUMATIC BRAIN DISEASE

The incidence of rheumatic cardiac disease in a group of 500 unselected necropsies done at the Central Hospital at Indianapolis was 5 per cent. This figure, according to Breutsch,¹ probably represents the prevalence of subclinical rheumatic fever in the population of an average mental hospital located in the same geographic latitudes. Neuropathologic studies reported by the same author revealed the occurrence of rheumatic obliterating arteritis in the brain of persons with rheumatic cardiac disease. This late cerebral sequel of rheumatic fever involved mainly the small meningeal and cortical vessels, producing gross or microscopic softening in the cortex. Breutsch² stressed that rheumatic brain disease may occur months and years after the acute stage of rheumatic fever, at a time when the person is enjoying apparent good health. The late vascular lesions of rheumatic fever are not infrequently seen in middle life, and may be responsible in a number of aged patients for psychoses characteristic of that period. The finding at necropsy that 9 per cent of the patients with dementia precox showed signs of rheumatic infection involving the brain, as well as the cardiac valves, raises the question as to the possible pathogenic role of the rheumatic infection in the causation of dementia precox in a definite subgroup of cases.

1. Breutsch, W. L., in *Ninety-Ninth Annual Report of the Central State Hospital, Indianapolis*, 1947.

2. Breutsch, W. L.: *Rheumatic Brain Disease: Late Sequel of Rheumatic Fever*, J. A. M. A. 124: 450-453 (May 31) 1947.

ORGANIZATION SECTION

Official Notes

A.M.A. OFFICIALS VISIT JAPAN

On August 14 Dr. R. L. Sensenich, President, and Dr. E. L. Henderson, Chairman of the Board of Trustees of the American Medical Association, returned to the United States from Japan. They were members of a delegation of five who went to Japan on the invitation of General Douglas MacArthur and Brigadier General Crawford F. Sams. Drs. Ernest E. Irons, E. J. McCormick and John H. Fitzgibbon will return in a week or ten days.

Any official report made by this group will go to General MacArthur. However, Drs. Henderson and Sensenich both were enthusiastic over the reception they received in Japan, both from the American officials and the members of the Japanese medical profession. There was ample opportunity for an exchange of ideas between the American Medical Association officials and the individuals who are guiding the affairs of the Japanese profession. Under the old régime, the Japanese Medical Association was a government-controlled organization. At the present time it is organized along lines similar to those of the American Medical Association. Japanese physicians are enthusiastic over this arrangement and had many things to discuss with the Americans.



American Medical Association officers with officials from Civil Affairs Section of General MacArthur's headquarters and a group of officers and members of Japanese Medical Associations. Seated, from left to right: J. Kurosawa (reception committee), R. Inada (ex-president), Colonel Johnson, S. Kawakita (vice president), Dr. Edward J. McCormick, Dr. John H. Fitzgibbon, Dr. R. L. Sensenich, A. Takahashi (president), Dr. Elmer L. Henderson, Dr. Ernest E. Irons, T. Izeki (vice president), Major Molton, Mr. Anton, T. Kitajima (ex-president) and T. Nakayama (preceding president). Standing: Y. Minamizaki (secretary), H. Mita (supervisor), R. Kobayashi (supervisor), K. Kodama (supervisor), T. Murayama (reception committee), T. Ogata (reception committee), Y. Ono (reception committee), H. Oka (director), T. Sassa (director), H. Takeuchi (director), H. Hashimoto (reception committee), R. Azuma (director), S. Furuhashi (director), name unknown, K. Sadakata (reception committee), name unknown, K. Kato (reception committee), name unknown, name unknown, A. Saita (government official of the Welfare Ministry), and name unknown.

Washington Letter

(From a Special Correspondent)

Aug. 30, 1948.

First Meeting of Heart Council

September 8 has been scheduled for the first meeting of the new National Advisory Heart Council, which will guide the Surgeon General of U. S. Public Health Service in administering the National Heart Act enacted recently by Congress. Composed of six professional experts and six leaders in public welfare and business, the Council's membership is as follows: Drs. T. Duckett Jones, Helen Hay Whitney Foundation; Irvin Page, Cleveland Clinic; Paul D. White, Massachusetts General Hospital (Boston); Tinsley Harrison, Southwestern Medical College; B. O. Raulston, University of Southern California School of Medicine, and C. A. Elvehjem, University of Wisconsin

sin biochemist; James S. Adams, New York businessman; E. B. MacNaughton, Portland, Ore., publisher; Mrs. Albert D. Lasker, New York health worker and philanthropist; Ernst Mahler, Wisconsin businessman; Maurice Goldblatt, Chicago merchant-philanthropist, and Albert J. Wolfe, president of Touro Infirmary, New Orleans.

Construction Bids for Clinical Research Center Opened

Low bid of \$3,273,000 was submitted for the first stage of construction of the clinical research center to be erected by the U. S. Public Health Service in Bethesda, Md. Bids were opened August 10 by the Public Buildings Administration, and award of the contract was expected to follow soon thereafter. A total of \$40,000,000 has been earmarked for construction and equipment of the huge center, which will have a 500 bed hospital and house laboratories of the National Institutes of Health.

GOVERNMENT SERVICES

ARMY

REGISTRY OF CARDIOVASCULAR PATHOLOGY

The Surgeon General of the Army and the director of the Army Institute of Pathology have approved the application of the American Heart Association to sponsor a Registry of Cardiovascular Pathology with the American Registry of Pathology Division of the Institute. Dr. Wallace Yater, Washington, D. C., has been appointed chairman of the registry committee by the American Heart Association.

COURSES IN CIVILIAN INSTITUTIONS

The following additional fifteen medical department officers will attend courses in the civilian institution indicated: Col. Charles T. Young, Harvard, internal medicine; Major Robert B. Lindberg, University of Michigan, bacteriology; Major Woodrow C. Herbert, University of California, San Francisco, pharmacy; Major Frank B. Rogers, Columbia University, library science; Major George H. Zacherle, Colorado State College of Agriculture and Mechanical Arts, special problems in surgery and research in surgery; First Lieut. Robert B. Fisher, George Washington University, orthoptics; First Lieut. Robert H. Moser, Gallinger Municipal Hospital, Washington, D. C., intern training; First Lieut. William F. Colliton, Providence Hospital, Washington, intern training; First Lieut. Park C. Jeans Jr., University Hospital, Augusta, Ga., intern training; First Lieut. Armand E. Hendee, Grady Memorial Hospital, Atlanta, Ga., intern training; First Lieut. Harry W. Orme, University of Minnesota Hospital, intern training; First Lieut. Richard K. Cole, Baltimore City Hospitals, intern training; First Lieut. William H. Hall, New York Hospital, intern training, and First Lieut. Lawrence J. Get, Metropolitan Hospital, New York, intern training.

SURGEON GENERAL PRAISES WORK IN EUROPEAN THEATER

The following letter, slightly abbreviated, was written by the Surgeon General of the Army to the Chief Surgeon in the European Theater.

Dear General Noyes:

In four weeks in Germany and Austria I have seen a cross section of the Army medical activities in Europe. During some of this time one of the groups of the leading American medical consultants who visit the European Theater each month for the Surgeon General have been with me.

I have been greatly impressed with the quality of the entire Medical Department service. Both medical administrative and purely professional work is superior. Health conditions are excellent and the sick rate is extremely low.

The patients are receiving care which parallels the care and treatment patients receive in the best hospitals in the United States. Most of this care is under the immediate attention of the younger group of medical officers. These officers are able, alert, careful and show a remarkable degree of understanding. The excellent training they have received in their years of college, medical school and hospital work is clearly evident. They reflect great credit on American medicine.

It has been a privilege to see all of this at first hand. This service performed with ability and good will reflects credit on the Army. I congratulate the Medical Department personnel on their devotion to duty and to its excellent performance.

R. W. BLISS,
Major General,
The Surgeon General.

PERSONAL

Morton M. Rayman, Ph.D., has been appointed chief of the Microbiologic Branch of the Food Research Division, Quartermaster Food and Container Institute for the Armed Forces, Chicago. Dr. Rayman will direct research on the nature and factors affecting the microbiologic and histologic changes which occur during the processing and storage of foods for the armed forces.

NAVY

EXAMINATIONS FOR APPOINTMENT IN REGULAR CORPS

Examinations for the selection of candidates for appointment to the grade of lieutenant (jg) in the Medical Corps of the Navy will be held at Naval hospitals in the United States October 4-8. Graduates of approved medical schools in the United States or Canada who have completed intern training in accredited hospitals or who will complete such training within four months of the date of the examination, and who are physically and otherwise qualified, are eligible to take the examination. They must be less than 32 years of age and will be required to appear before boards of medical examiners at the Naval hospital nearest their place of residence. Following approval by the President of the United States, selected candidates will receive appointment and orders assigning them to duty in a Naval medical facility for active Naval service.

Public Law 365—80th Congress, approved Aug. 5, 1947, provides additional compensation of \$100 a month for each month of active service performed by Medical Corps officers. This is in addition to any pay or allowances that Medical Corps officers are otherwise entitled to receive. The amount paid to any one officer under this authority is limited to a total of \$36,000 computed on the basis of \$1,200 yearly over a period of thirty years' active service. Detailed information may be obtained from Naval Officer Procurement offices or from the Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

ADMIRAL PUGH RETURNS FROM AFRICA

Rear Admiral Lamont Pugh has returned from a visit to the Navy's medical facilities in the Mediterranean and African areas. He states that the Egyptian government and the Navy's Research Unit in Cairo have the most cordial relations and that the lease

on the property being used by the Navy in Cairo has been renewed. Admiral Pugh also visited Nairobi in Central Africa, where the Navy's Medical Research Unit which is accompanying the University of California's African expedition is located. It was in this area that the Navy captured the rare elephant shrews recently reported in THE JOURNAL. After visiting the Navy's medical facilities in Athens, Greece, as well as those of the Sixth Task Fleet and the United States Naval Forces, East Atlantic and Mediterranean, Admiral Pugh returned home via Germany and England.

JOINT SERVICES EXHIBIT

At the fiftieth annual convention of the American Hospital Association in Atlantic City, N. J., September 20, the Bureau of Medicine and Surgery will enter into a joint exhibit with its sister services showing how medical care is provided by the government services. This exhibit will point out what federal agencies operate hospital services, geographic location of these facilities, and for what persons they are operated; it will also show the number of medical personnel involved, and the training programs sponsored by each agency. The U. S. Naval Hospital Ship *Consolation* will be anchored off Atlantic City during the convention, and transportation for members of the convention to the hospital ship will operate from Starn's Pier.

RETIRED OFFICERS VOLUNTEER

The following medical officers on the retired list have volunteered for recall to active duty to aid in relieving the present shortage of medical officers: Capt. Enoch G. Brian, Coronado, Calif.; Capt. Harrison L. Wyatt, Berkeley, Calif.; Comdr. Norman J. Haverly, Long Beach, Calif., and Lieut. Bernard L. Rhodes Jr., Live Oak, Fla.

VETERANS ADMINISTRATION

RESIDENTS WANTED FOR TRAINING IN PSYCHIATRY

The Veterans Administration has immediate openings for at least one hundred young doctors interested in residency training in psychiatry or neurology. Veterans Administration hospitals offering these residencies are situated in almost every section of the country and all are under supervision of the deans' committees, mostly composed of members of university faculties of class "A" medical schools.

Applicants for residency training must be citizens of the United States, graduates of a school of medicine approved by Veterans Administration and the Council on Medical Education and Hospitals of the American Medical Association, and must have completed an internship acceptable to Veterans Administration. In general, these residencies cover a three year program of specialty training, although one and two year programs are available at most of the hospitals. Information may be obtained by writing the Chief Medical Director, Veterans Administration, Washington 25, D. C.

Residency selection and residency grades for the individual are recommended by the deans' committee supervising the program at the Veterans Administration hospital in which the applicant desires to train.

The Veterans Administration is organizing a new class of residents in psychiatry for training, for example, in the new Veterans Administration hospital in Tomah, Wis. Completion of the class is anticipated by September 1. Residents in the Tomah hospital will rotate between the university's psychiatric institute in Madison, Wis., and the hospital on a six months' basis. The residents will devote part of their school time to

the Madison Veterans Administration outpatient clinic for neuro-psychiatric patients. The new and well equipped hospital in Tomah accommodates 1,200 patients.

Three grades of residents have been established: senior at \$3,000 a year, intermediate at \$2,700 and junior at \$2,400. Grade of appointment is determined by recommendations of the deans' committee. Applicants should send a complete biographic sketch and detailed information covering medical experience to Dr. Lorenz, University of Wisconsin Medical School, 1300 University Avenue, Madison.

CHIEF OF RESEARCH APPOINTED

The Veterans Administration announces that Dr. Alfred H. Lawton, formerly dean, University of North Dakota School of Medicine at Grand Forks, has been appointed chief of general medical research in the Veterans Administration Department of Medicine and Surgery, Washington, D. C. Dr. Lawton, who assumed his new duties August 1, is supervising studies of epilepsy, hepatitis, psychoneuroses and other diseases suffered by veterans. He succeeds Dr. L. G. Welt, who resigned to return to the department of internal medicine at Yale University Medical School, New Haven, Conn. Dr. Lawton received his M.D. and Ph.D. degrees from Northwestern University, interned in Passavant Memorial Hospital, Chicago, and took residency training in surgery at the Henry Ford Hospital, Detroit. He was a research fellow at Northwestern University and later an assistant professor in the University of Arkansas School of Medicine. During World War II he served with the United States Public Health Service.

PUBLIC HEALTH SERVICE

THE NEW CLINICAL RESEARCH INSTITUTION

The Federal Security Administrator announced on June 29 plans for the clinical research institution to be constructed for the National Institutes of Health at Bethesda, Md. The thirteen story building will house the National Heart Institute, the National Institute of Mental Health, the hospital facilities of the National Cancer Institute, the National Institute of Dental Research, and services for studying patients with infectious and tropical diseases. The laboratories will occupy two thirds of the building, and the five hundred bed hospital will receive patients from all parts of the country referred by

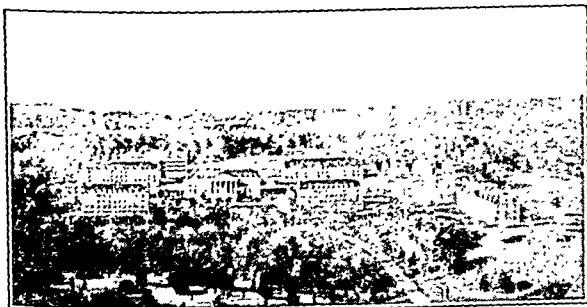
the National Institute of Health, and partially on adjoining ground. The site is readily accessible from Washington by automobile and bus. The hospital will have the most modern facilities for patients. Throughout the institution special opportunities for study will be made available for qualified physicians and research workers. The unusual design of the building, the special equipment and research teams will give also unique postgraduate opportunities to physicians and scientists as well as members of the regular staff.

TRAINING MENTAL HEALTH PERSONNEL

The mental health program authorized by Congress in 1946 received an appropriation of \$9,028,000 for the fiscal year 1949 which will be used to finance a program of research on mental illness, to develop local mental health facilities, to train mental health personnel, all in addition to mental health activities within the U. S. Public Health Service. For grants-in-aid to states, Congress appropriated \$3,555,000, which will be allocated to states on the basis of their population, financial need and extent of the mental health problem. The National Advisory Mental Health Council recommended numerous grants to universities, hospitals and clinics to support their training programs, and these grants were approved by the Surgeon General of the Public Health Service, the Federal Security Administrator announced on July 28. The Council making these recommendations considered applications for 205 training grants and 1,099 training stipends, of which it recommended approval of 143 training grants and 561 stipends. With the funds appropriated by Congress for 1949 it was possible to award 86 training grants and 264 training stipends.

PERSONAL

Dr. Maynard H. Mires Jr. has been assigned as epidemiologist with the Mississippi State Board of Health, succeeding Dr. George Reed, who has been transferred to a Marine hospital in Ohio.



The National Institute of Health, near which the new clinical research institute will be constructed.

physicians, hospitals and other health agencies on the basis of problems under study at various times. This unusual combination of hospital and laboratory facilities within a single structure will make possible an attack by physicians and laboratory workers on clinical medical problems—cancer, heart disease, mental illness and other degenerative diseases. This institution will be located a few miles north of the District of Columbia in Maryland, partially on the estate given to the government by Mr. and Mrs. Luke I. Wilson, now used for

GENERAL

Red Cross Recruits Nurses for Poliomyelitis.—By August 1, the American Red Cross had recruited 630 nurses from chapters across the country in response to nursing needs for poliomyelitis. It had provided 306 nurses for North Carolina, a few for South Carolina, and sent 90 nurses from Midwestern states into Texas, California and scattered sections of Iowa, Illinois, the Dakotas, Minnesota, Wisconsin and Arkansas. Pacific area chapters provided 181 nurses for California and for Boise, Idaho. The National Foundation for Infantile Paralysis pays transportation and salaries for poliomyelitis nurses.

Assets of American Hospitals.—According to the 1948 Hospital Directory published by the American Hospital Association, the average cost of caring for a patient for one day in a general hospital rose from \$9.39 to \$11.09 in the year 1946-1947. The average income from patients was \$9.71, leaving a daily deficit of \$1.38 per patient to be made up through voluntary contributions and gifts from the public. General hospitals had about 151 employees for every 100 patients to maintain prevailing high standards of patient care. Hospitals spent about \$400,000,000 more in 1947 than in 1946, because of high wages, higher prices and expanded services. Hospitals in 1947 had total assets of about \$6,000,000,000, which is more than \$42 for every man, woman and child in the United States. Of that amount, general hospitals' plant valuation represents almost \$3,500,000,000, an average of \$7,500 per bed.

Society Elections.—At the joint meetings of tuberculosis associations in New York, Dr. Herbert L. Mantz, Kansas City, Mo., was chosen president, and Dr. Rollin D. Thompson, Orlando, Fla., president elect of the National Tuberculosis Association. The newly elected president of the American Trudeau Society is Dr. H. Corwin Hinshaw, Rochester, Minn., and the president elect is Dr. Kirby S. Howlett Jr., Shelton, Conn. Officers elected by the Conference of State and Provincial Health Authorities of North America at the annual meeting in Chicago, June 25-26, include Drs. John T. Phair, Toronto, Canada, president, and Russell O. Saxvik, Bismarck, North Dakota State Health Officer, secretary-treasurer. At the annual meeting of the American College of Chest Physicians in Chicago in June, Dr. Richard H. Overholt, Brookline, Mass., became president, Dr. Joseph C. Placak, Cleveland, was chosen president elect and Dr. Minas Joannides, Chicago, treasurer. Murray Kornfeld, Chicago, remains executive secretary.

Scholars in Medical Science.—Medical schools in the United States and Canada are invited by the John and Mary R. Markle Foundation to make nominations for the second group of Scholars in Medical Science on or before December 1. Each school, through the dean, may nominate one candidate. The program is designed to aid promising young men and women planning careers in academic medicine, who have not yet made their reputations. They should have completed the usual fellowship training in some area of science related to medicine and should hold, or expect to hold, in the academic year 1949-1950 a full time faculty appointment on the staff of a medical school. Grants of \$25,000, payable at the rate of \$5,000 annually, will be made to the schools over a five year period for the support of each scholar finally selected, his research, or both. Sixteen were chosen in 1948. A booklet describing the plan is available on request from the foundation, 14 Wall Street, New York 5.

Scholarships for Study of Cerebral Palsy.—Eight physicians, surgeons and therapists have been awarded scholarships for specialized training in cerebral palsy by the National Society for Crippled Children and Adults. This is the first national scholarship program established to meet the challenge of a crippling condition that disables some half million Americans, the society stated. The scholarships were made possible under the first of six \$5,000 yearly grants from Alpha Chi Omega, national women's sorority. The first eight recipients are: Arline F. Bovee, Mukileto, Wash., physical therapist at the Everett, Wash., Cerebral Palsy School; Miriam Bunce, Denver, physical therapist, Colorado Society for Crippled Children and Adults, Inc.; Dr. Harriet E. Gillette, Warm Springs, Ga., Fellow in Physical Medicine at Emory University, Atlanta, Ga.; Dr. Stanford F. Hartman, Phoenix, Ariz.; Bette Redwine, Albuquerque, N. M., physical therapist, Veterans Administration; Dr. Louis Spekter, Hartford, Conn., State Department of Health; Joan A. Schauble, Seattle, Wash., physical therapist and speech correctionist, and Harold Westlake, Ph.D., Wilmette, Ill.

World Health Organization.—As of June 15, a total of forty-three countries, including the United States, had formally joined the World Health Organization and several other nations were taking final steps toward ratification. President Truman, in signing the bill for United States membership, said, "The World Health Organization can help contribute substantially

to the attainment of the healthy, vigorous citizenry which the world needs so badly today and tomorrow."

The first World Health Assembly convened June 24 at Geneva, Switzerland, with representatives of nearly all nations of the world in attendance. The delegates had before them for consideration the report of the Interim Commission work since 1946 with proposals for concentration on four main programs—malaria, tuberculosis, maternal and child health, and venereal diseases, in addition to suggested activity for 1949 in forty-four other medical, medicosocial, and related fields.

The Expert Committee on Malaria of the World Health Organization which met in Washington last May outlined methods to implement the program on malaria, which disease, the Interim Commission states, attacks 300,000,000 persons each year, of whom about 3,000,000 die. A maternal and child health section has been established to provide machinery for the international exchange of information on all phases of this subject. The Interim Commission states also that about 50,000,000 persons suffer each year from tuberculosis, of whom about 5,000,000 die. Cases of tuberculosis are increasing rapidly, it is said, in many parts of the world. The Interim Commission plans to place special emphasis on syphilis, giving governments assistance in national and local control. According to Dr. Brock Chisholm, Executive Secretary of the Interim Commission, the delegates to the first World Health Assembly had five weeks of hard work before them.

FOREIGN

Japan

Japanese Medical Journals.—Dr. Roscoe L. Sensenich, President of the American Medical Association, on his return from a recent official visit to Japan brought a copy of volume 1, no. 1 of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION printed in the Japanese language, which contains translations of selected articles from THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION published in the United States. Authority to publish this Japanese journal was granted by the trustees of the American Medical Association. Dr. Sensenich brought back also volume I, no. 1 of *The Japanese Medical Journal*, published in Tokyo bimonthly in English as the official organ of the National Institute of Health in Japan.

Health Reform in Japan.—The Japanese Diet passed early in July two additional modern health reforms, the Venereal Disease Prevention Law and the Preventive Vaccination Law. The Venereal Disease Prevention Law provides that all pregnant women are to have a health examination to determine the presence or absence of venereal disease and all persons entering into marriage are to obtain certificates showing that they are free from venereal disease. Compulsory examination may now be performed on persons in whom there is reasonable evidence to suspect venereal disease, but if they claim there is not reasonable evidence they may appeal to a court for withdrawal of the order for a venereal disease examination. The new law requires further that doctors give instruction to patients with venereal disease as to how to protect others from their diseases and also as to the treatment which they are to follow. Doctors must report to health authorities the names and addresses of contacts and of those patients who fail to follow instructions pertaining to treatment and preventive measures. The law requires that all such information obtained by physicians and health officials be kept confidential.

Until this law was passed, compulsory vaccination was required only for smallpox; it is now required also for typhoid, paratyphoid, whooping cough, tuberculosis, and diphtheria. According to Dr. Ira D. Hirsch of the Preventive Medicine Division, Supreme Command, American Forces in the Pacific, through the provisions of this law the public health standards for the Japanese people will be greatly improved.

CORRECTIONS

Diabetes.—In THE JOURNAL of July 24, page 1172, in the review of the book "Diabetes and the Diabetic in the Community," the primary purpose of the book was misstated. The author states in the preface that the book was written primarily for the teaching of the patient in the community rather than for the nursing of the patient in the hospital.

Acute Renal Insufficiency.—In the article entitled "Severe Acute Renal Insufficiency with Recovery" by Muirhead and Fromm in the August 14 JOURNAL, page 1378, the caption for figure 1 belongs to figure 4 and the caption for figure 4 belongs to figure 1. Also in the properly placed caption for figure 4 the term "unbroken line" is used twice. Actually here "unbroken line" represents blood urea (milligrams per hundred cubic centimeters) and "broken line" represents urine urea (grams).

Deaths

Charles Frederick Williams † professor emeritus of psychiatry at the Medical College of the State of South Carolina, died at his home in Columbia, S. C., June 3, aged 72, of coronary occlusion. Dr. Williams was born in York County, S. C., Aug. 6, 1875. After graduation from the University of Maryland School of Medicine in Baltimore in 1899, he first practiced in York, and then, on March 4, 1901, became acting assistant surgeon in the U. S. Army, serving in Georgia and in the Philippines. On March 4, 1903, Dr. Williams resigned from the army, took postgraduate work in Baltimore; in July 1903, he began general practice in Columbia, where he served as city physician. He was secretary of the state board of health in 1907 and in 1908 became South Carolina's first state health officer, resigning in 1911 to take postgraduate work in Europe. In 1910 he was vice chairman of the Section on Preventive Medicine of the American Medical Association. Dr. Williams was a specialist certified by the American Board of Psychiatry and Neurology, past president of the Columbia Medical Society, South Carolina Hospital Association, American Psychiatric Association and South Carolina Conference on Social Work. He was one of the organizers and a director of the South Carolina Society for Mental Hygiene, a director of the Richland County Mental Hygiene Society and a director of the National Committee for Mental Hygiene. He was one of the organizers, a member of the executive committee and a director of the Columbia Chapter of the American Red Cross, and a delegate to the International Convention of Rotarians at Vienna, Austria, in 1931. In 1915, he was appointed a member of the board of regents of the South Carolina State Hospital, where he was superintendent from 1915 to 1945; he then resigned to become director of the hospital's research activities. In 1942 he became a trustee of the Ensor Research Foundation. The University of South Carolina conferred on him the degree of doctor of laws and awarded him the Algernon Sydney Sullivan Medal for unselfish service.

Philip Weatherly Huntington † Colonel, U. S. Army, retired, Bradenton, Fla.; born in Connecticut Jan. 20, 1876; Columbian University Medical Department, Washington, D. C., 1898; Army Medical School in 1903, Medical Field Service School, advanced course, in 1927; entered the regular army as an assistant surgeon in 1902; promoted through the various grades to that of colonel in October 1928; served overseas during World War I and was awarded the Silver Star and Purple Heart; formerly commandant at the Army Medical School and Army Medical Center in Washington, D. C.; retired for age by operation of law Jan. 31, 1940; recalled to active duty and served during World War II; retirement changed to disability in line of duty Aug. 6, 1945; professor of military science and tactics at his alma mater; fellow of the American College of Surgeons; died May 12, aged 72, of heart disease.

Olga R. Povitzky, New York; born Dec. 25, 1877; Woman's Medical College of Pennsylvania, Philadelphia, 1901; for many years research bacteriologist with the New York City Department of Hospitals; during World War I served in France with the hospital unit of the New York Infirmary; member of the New York Academy of Medicine, the Woman's Medical Association, American Association of Immunologists; Society of American Bacteriologists and the American Public Health Association; formerly connected with bacteriologic research at Mount Sinai Hospital and the gynecologic and medical clinics of the New York Infirmary for Women and Children; died at Moores Mill, N. Y., May 21, aged 70, of leukemia, coronary thrombosis and diabetes mellitus.

Lewis George Allen † Kansas City, Kan.; born in Lenexa, Kan., in 1891; University of Kansas School of Medicine, Kansas City, Kan., 1917; professor of clinical radiology at his alma mater; specialist certified by the American Board of Radiology; past president of the Radiological Society of North America, Kansas City Southwest Clinical Society, Wyandotte County Medical Society and the Kansas City Radiological Society; fellow of the American College of Physicians; chancellor of the American College of Radiology; member of the American Roentgen Ray Society; served during World War I; on the staffs of Bethany Hospital, St. Margaret's Hospital and Providence Hospital, where he died May 28, aged 57, of myelogenous leukemia.

William Joseph Leahy † Ansonia, Conn.; born in Ansonia, Oct. 23, 1876; College of Physicians and Surgeons, Baltimore, 1899; member of the West Virginia State Medical Association; at one time practiced in Mannington, W. Va., where he was president of the Marion County Medical Society, health officer and president of the chamber of commerce; served in the medi-

cal corps of the U. S. Army during World War I; died in the New Haven (Conn.) Hospital May 31, aged 71, of cardiac infarct, pulmonary embolus and arteriosclerosis.

Achilles S. Abshire, Beckley, W. Va.; Baltimore Medical College, 1891; died in the Raleigh General Hospital May 30, aged 87, of heart disease.

Roy M. Armstrong, Franklin, Ky.; Hospital Medical College, Eclectic, Atlanta, 1911; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; specialist certified by the American Board of Otolaryngology; affiliated with St. Joseph and Good Samaritan hospitals in Lexington; died May 3, aged 64, of coronary occlusion.

Henry Barnes † New Bedford, Mass.; Columbia University College of Physicians and Surgeons, New York, 1903; veteran of the Spanish-American War; on the courtesy staff of St. Luke's Hospital; chief of staff at Acushnet Hospital; died May 29, aged 70, of lymphosarcoma of the ileum.

William A. Boies, Knoxville, Tenn.; New York Homeopathic Medical College and Hospital, New York, 1896; member of the American Medical Association; affiliated with St. Mary's and Fort Sanders hospitals; died June 5, aged 77, of coronary thrombosis.

Raymond Bernard Benning † Fort Recovery, Ohio; Northwestern University Medical School, Chicago, 1936; on the staff of the Gibbons Hospital, where he died May 21, aged 39, of coronary thrombosis.

John L. Bosworth † Elkins, W. Va.; College of Physicians and Surgeons, Baltimore, 1889; an Affiliate Fellow of the American Medical Association; served as president of the board of education of the Huttonsville District, and as a member of the board of education of Randolph County for six years; died May 14, aged 91, of senility.

William K. Detwiler, Bellevue, Wash.; New York Homeopathic Medical College and Hospital, New York, 1893; died in the Virginia Mason Hospital, Seattle, May 12, aged 77, of coronary thrombosis.

Fred Eugene Earle, Weeks Mills, Maine; Medical School of Maine, Portland, 1900; member of the American Medical Association; died in China April 22, aged 76, of coronary thrombosis.

John Wesley Eckman Jr., Winchester, Ill.; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1908; affiliated with Passavant Memorial Hospital and Our Saviour's Hospital, in Jacksonville, where he died May 11, aged 66, of cirrhosis of the liver.

David Ellner, New York; Medico-Chirurgical College of Philadelphia, 1916; died March 10, aged 61, of cerebrovascular accident and arteriosclerosis.

Prewitt LaFayette Hagler, Birmingham, Ala.; Medical College of Alabama, Mobile, 1891; affiliated with the West End Branch of Baptist Hospital and the South Highland Infirmary; died in Jefferson Hospital May 3, aged 81, of uremia.

George B. Hamlin, Minneapolis; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1896; member of the American Medical Association; served the faculty of his alma mater; affiliated with Maternity and St. Barnabas hospitals; died May 2, aged 77, of coronary disease.

Stuart Van Rensselaer Hooker, Seattle; Harvard Medical School, Boston, 1902; member of the American Medical Association; fellow of the American College of Surgeons; died May 20, aged 74, of coronary thrombosis.

Chester James Hurlbut, Lake Wales, Fla.; University of Vermont College of Medicine, Burlington, 1899; for many years superintendent of the Bartow General Hospital in Bartow; died May 3, aged 74, of diabetes mellitus and cerebral hemorrhage.

James Beauregard Jarvis, Laurel, Miss.; Memphis (Tenn.) Hospital Medical College, 1893; member of the American Medical Association; died May 31, aged 87, of heart disease.

Fred Johnson † Eau Claire, Wis.; Wisconsin College of Physicians and Surgeons, 1904; died April 30, aged 76, of cerebral hemorrhage and arteriosclerosis.

Walter Gambol Johnson, Childress, Texas; University of Tennessee Medical Department, Nashville, 1900; died in Childress General Hospital May 17, aged 70, of cerebral hemorrhage.

William Arthur Jones, Morton, Miss.; Mississippi Medical College, Meridian, 1911; died May 2, aged 70, of arteriosclerosis.

Israel J. K. Light, Reading, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the American Medical Association; died in the Good Samaritan

Hospital, Lebanon, April 23, aged 75, of malignant prostatic hypertrophy.

John Joseph Williams Looney * Rocky Mount, N. C.; University of Virginia Department of Medicine, Charlottesville, 1909; went to the Mayo Clinic, Rochester, Minn., in September 1914 as an assistant in the department of ophthalmology and left the clinic in July 1918; on the staff of the Park View Hospital; died May 12, aged 68, of cerebral hemorrhage.

Raymond Stanley Love, Whiting, Kan.; Northwestern University Medical School, Chicago, 1909; died in Muscatine, Iowa, April 13, aged 64, of coronary thrombosis.

Henry Lubinsky * Fall River, Mass.; Tufts College Medical School, Boston, 1927; medical examiner for a draft board during World War II; chief of pediatrics at Fall River General and St. Anne's hospitals; on the staff of Union Hospital; died May 25, aged 45, of cerebral hemorrhage.

Eugene Hartwell Luck * Roanoke, Va.; Medical College of Virginia, Richmond, 1912; died in the Lewis-Gale Hospital May 10, aged 62, of cerebral hemorrhage.

Arthur Norton Mackey, Chicago; Medical College of Indiana, Indianapolis, 1891; died June 6, aged 80, of chronic myocarditis and arteriosclerosis.

Robert Morris Marshall, San Antonio, Texas; Colorado School of Medicine, Boulder, 1903; died May 1, aged 79, of cardiac decompensation.

John Wallace McCollom, Portland, Ore.; University of Oregon Medical School, Portland, 1908; member of the American Medical Association; served during World War I; affiliated with the Good Samaritan Hospital, where he died May 26, aged 62, of carcinoma.

Henry Garnsey McCormick, Laurel, Miss.; Rush Medical College, Chicago, 1891; member of the American Medical Association and the American College of Radiology; specialist certified by the American Board of Radiology; died May 23, aged 80, of cerebral hemorrhage.

John Edward McGuiggan, Chicago; Chicago College of Medicine and Surgery, 1915; member of the American Medical Association; served during World War I; affiliated with Evangelical Hospital and St. George's Hospital, where he died May 30, aged 56, of coronary thrombosis.

Charles M. McNaull * Indianapolis; Bellevue Hospital Medical College, New York, 1891; on the staffs of the General, Methodist and St. Vincent's hospitals; died May 16, aged 84, of coronary occlusion.

George Harris Merryman * Klamath Falls, Ore.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; affiliated with Hillside Hospital; died May 6, aged 69, of coronary heart disease.

William Glassell Miller Jr., Freeport, N. Y.; Long Island College Hospital, Brooklyn, 1908; also an attorney; formerly member of the Nassau County Mosquito Extermination Commission and director of the First National Bank; died May 27, aged 69, of coronary occlusion.

Robert Edward Alexander Milne, Le Roy, N. Y.; University of Toronto Faculty of Medicine, 1925; member of the American Medical Association; served as a member of the board of education; during World War II a major in the medical corps of the U. S. Army Air Forces in the Mediterranean theater; on the staff of the Genesee Memorial Hospital, Batavia; died in Strong Memorial Hospital, Rochester, May 4, aged 48, of carcinoma.

John George Mollath, White Plains, N. Y.; Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1891; died April 10, aged 80, of diabetes mellitus and arteriosclerosis.

Alexander Harris Moody, Dyersburg, Tenn.; Memphis (Tenn.) Hospital Medical College, 1903; served as county health physician; on the staff of the Baird Brewer Hospital; died May 9, aged 68, of carcinoma of the sigmoid colon.

Tarleton Flemming Moore, Hot Springs National Park; Ark.; University of Texas School of Medicine, Galveston, 1908; served overseas during World War I; formerly associated with the U. S. Public Health Service Reserve and with the Veterans Administration, having been in charge of its hospital in Alexandria, La., and on the staffs of various other administration hospitals; died May 28, aged 63, of carcinoma of the palate.

Frank Henry Mowe, Leominster, Mass.; Dartmouth Medical School, Hanover, N. H., 1888; died April 26, aged 84, of uremia.

Frank Leo Mozdy, Erie, Pa.; University of Cincinnati College of Medicine, 1936; served overseas during World War

II; on the staffs of St. Vincent's and Hamot hospitals; died May 8, aged 40, of coronary thrombosis.

George L. Mueller, St. Louis; St. Louis College of Physicians and Surgeons, 1890; died in Barnes Hospital May 3, aged 79, of hypertensive cardiovascular renal disease.

Joseph Timothy Murphy * Pottsville, Pa.; Jefferson Medical College of Philadelphia, 1913; attached to the 103rd Engineers with the rank of captain during World War I; one of the founders, staff member and a member of the hospital board of the Lemos B. Warne Hospital, where he died May 17, aged 58, of cerebral hemorrhage.

Max W. Myer * St. Louis; Marion-Sims College of Medicine, St. Louis, 1899; member of the founders group of the American Board of Surgery; professor of surgery at the St. Louis University School of Medicine; fellow of the American College of Surgeons; served during World War I; affiliated with the Jewish Hospital; died in Clayton, Mo., May 16, aged 70, of heart disease.

Anthony F. Myers, Blooming Glen, Pa.; Missouri Medical College, St. Louis, 1885; member of the American Medical Association; for many years secretary of the Bucks County Medical Society; died in Grand View Hospital, Sellersville, May 6, aged 92, of hypostatic pneumonia and fracture of humerus received in a fall.

Thomas Francis Nolan, New York; Jefferson Medical College of Philadelphia, 1907; died May 27, aged 64, of cerebral hemorrhage.

Thomas Hillman Oliphant * Corpus Christi, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1925; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; died May 31, aged 47.

John Ransom Palmer, Shreveport, La.; Columbia University College of Physicians and Surgeons, New York, 1936; member of the American Medical Association and of the Medical Society of the State of New York; interned at St. Luke's Hospital in New York; served overseas during World War II; died in a hospital at Miami, Fla., May 2, aged 43.

John Dent Peabody, St. Petersburg, Fla.; Long Island College Hospital, Brooklyn, 1881; University of Pennsylvania Department of Medicine, Philadelphia, 1882; member of the American Medical Association; veteran of the Spanish-American War; served on the staff of the Mount Park Hospital; died May 30, aged 88, of pneumonia and arteriosclerosis.

Herbert Leroy Pettitt * Morrison, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; formerly assistant health director of the state department of public health; died May 6, aged 72, of virus pneumonia and coronary occlusion.

Joseph Royal Phelps * Medical Director, Captain, U. S. Navy, retired, Long Beach, Calif.; Harvard Medical School, Boston, 1903; entered the U. S. Navy on July 24, 1908; retired Feb. 1, 1939 on own application after thirty years' service; died in the U. S. Naval Hospital May 8, aged 67, of ruptured aortic aneurysm due to arteriosclerosis.

Charles Bates Phillips * Amsterdam, N. Y.; Albany (N. Y.) Medical College, 1908; past president of the Montgomery County Medical Society; affiliated with the Amsterdam City and St. Mary's hospitals; died May 11, aged 63, of carcinoma of the stomach.

John Ezra Phillips, Ewing, Ill.; St. Louis University School of Medicine, 1903; died May 8, aged 75, of heart disease.

Samuel Plahner, Milwaukee; Medizinische Fakultät der Universität Wien, Vienna, Austria, 1903; member of the American Medical Association and Central Neuropsychiatric Association; served on the staff of the Evangelical Deaconess Hospital; died in the Milwaukee Hospital May 8, aged 70, of acute gastrointestinal hemorrhage.

Rudolph M. Rau * Frederick, Md.; College of Physicians and Surgeons, Baltimore, 1893; died May 26, aged 76, of cerebral hemorrhage.

John Augustus Riebel * Columbus, Ohio; Ohio Medical University, Columbus, 1901; in 1940 received the honorary degree of doctor of laws from Capital University; on the staffs of Mercy Hospital and White Cross Hospital, where he died May 27, aged 78, of cerebral hemorrhage.

Rose Sylvia Rubin * Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1910; served on the boards of education and health; on the staff of Mount Sinai and Women's hospitals; died May 16, aged 68, of carcinoma.

John Edward Ruisi * Westerly, R. I.; Tufts College Medical School, Boston, 1917; fellow of the American College of Surgeons; medical officer for the U. S. Coast Guard since 1930;

served during World War I; member of the International College of Surgeons; consulting surgeon at the Homeopathic and St. Joseph's hospitals in Providence and South County Hospital, Wakefield; senior surgeon at Westerly Hospital; died May 27, aged 56, of carcinoma of the right kidney.

Nicholas Alexander Rumanceff, Brooklyn; University of Moscow Faculty of Medicine, Russia, 1899; since 1926 assistant pathologist at Kings County Hospital; died May 21, aged 73, of cerebral hemorrhage.

Arthur Jemmott Sayers, Yonkers, N. Y.; Howard University College of Medicine, Washington, D. C., 1929; served on the staff of the Lincoln Hospital in New York, where he died April 11, aged 54, of cerebral thrombosis.

August Henry Schade † Toledo, Ohio; Toledo Medical College, 1908; for many years secretary-treasurer of the Ohio Society of Pathologists; charter member of the American Society of Clinical Pathologists; served during World War I; on the staff of the Robinwood Hospital; died May 15, aged 63, of pulmonary edema.

Joseph John Schill † Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1904; a medical examiner for draft boards during World wars I and II; on the courtesy staff of St. Francis Hospital, where he died May 8, aged 70, of arteriosclerotic heart disease.

Harry Leach Schurmeier † Santa Barbara, Calif.; Northwestern University Medical School, Chicago, 1911; member of the American Association for the Surgery of Trauma; served in France during World War I; died May 11, aged 64, of coronary thrombosis.

Walter Edgar Scott, Adel, Iowa; Drake University College of Medicine, Des Moines, 1891; at one time on the faculty of his alma mater; member of the American Medical Association; served as a member of the board of education; died in Des Moines May 21, aged 83, of cardiac compensation.

Newton Loomis Sebastian, Pass Christian, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1924; member of the American Medical Association and of the Louisiana State Medical Society; served in the U. S. Naval Reserve during World War II; died in the Memorial Hospital, Gulfport, May 7, aged 47, of uremia.

William Alvin Sickels † South Milwaukee, Wis.; Detroit College of Medicine, 1896; served during World War I; died May 19, aged 77, of coronary occlusion.

Maurice L. Silberman, New York; Medical College of Virginia, Richmond, 1911; member of the American Medical Association; died May 5, aged 65, of coronary thrombosis.

Caroline B. Skinner, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1897; for many years on the staff of Deaconess Hospital; died June 7, aged 90, of senility.

Lotus Mast Slabaugh, Nappanee, Ind.; Hahnemann Medical College and Hospital of Philadelphia, 1928; member of the American Medical Association; local health officer; affiliated with the Elkhart (Ind.) General Hospital, where he died May 21, aged 46, of coronary occlusion.

George Ritter Smith † Seattle; John A. Creighton Medical College, Omaha, 1909; member of the Idaho State Medical Association and the American Psychiatric Association; at one time state director of public health in Idaho; formerly superintendent of Nevada State Hospital in Reno, and medical superintendent of the State Hospital, South, Blackfoot, Idaho; served as senior psychiatrist at the Northern State Hospital, Sedro Woolley, Wash.; died in Swedish Hospital May 15, aged 62, of aneurysm.

William Polson Smith, Columbus, Mont.; University of Illinois College of Medicine, Chicago, 1909; member of the American Medical Association and the International College of Surgeons; past president of the Montana State Medical Association and the Montana Public Health Association; served as a major in the medical corps of the Army of the United States during World War II; died in Beehive May 4, aged 66, of coronary occlusion.

Joseph Nelson St. Denis, Boston; Baltimore University School of Medicine, 1892; member of the American Medical Association; died May 20, aged 82, of arteriosclerosis.

Timothy Joseph Sullivan, Washington, D. C.; Georgetown University School of Medicine, Washington, 1904; died in St. Elizabeth's Hospital May 26, aged 74, of lobar pneumonia.

John Richardson Thompson, Bridgeport, Ill.; Hospital College of Medicine, Louisville, Ky., 1902; member of the American Medical Association; formerly county coroner; for many years member of the Illinois General Assembly; died May 14, aged 70, of coronary thrombosis.

John George Vaughan † New York; Northwestern University Medical School, Chicago, 1907; studied at London School of Medicine; director of the Associated Mission Medical Office; formerly medical missionary in China; died in White Plains (N. Y.) Hospital, May 17, aged 70, of coronary thrombosis.

Calvin Albert Walker † San Francisco; Cooper Medical College, San Francisco, 1905; fellow of the American College of Surgeons; served during World War I; past president of the Western Association of Industrial Physicians and Surgeons and vice president of the Congress of Railway Surgeons; chief surgeon for the Southern Pacific General Hospital; on the staff of St. Francis Hospital; died May 18, aged 73.

Clarence Kraus Weil † Montgomery, Ala.; Columbia University College of Physicians and Surgeons, New York, 1923; specialist certified by the American Board of Internal Medicine; member of the American Association for the Study of Allergy; served during World Wars I and II; died May 5, aged 47, of coronary thrombosis.

Stephen Whitaker Wells, Liberty, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the American Medical Association; formerly mayor, fire chief and coroner; died May 21, aged 72, of cerebral embolus and coronary occlusion.

Jacob Hial West, Champaign, Ill.; Cooper Medical College, San Francisco, 1894; died in the Memorial Hospital, Springfield, May 1, aged 81.

Edward Claude Westaver, St. Louis; St. Louis College of Physicians and Surgeons, 1918; died May 20, aged 66, of cerebral hemorrhage.

Frank Robert Wheelock † Scranton, Pa.; Harvard Medical School, Boston, 1905; member of the American College of Chest Physicians; served as director of public health; veteran of the Spanish-American War; received decorations from the French and U. S. governments for service during World War I; formerly medical director of Lackawanna County Tuberculosis Hospital; died May 12, aged 69.

Walter Burleigh Whipple, Peoria, Ill.; Chicago College of Medicine and Surgery, Chicago, 1904; died in the Proctor Hospital April 25, aged 65.

William G. White, Centralia, Mo.; St. Louis College of Physicians and Surgeons, 1892; Barnes Medical College, St. Louis, 1896; served overseas during World War I; died in Audrain County Hospital, Mexico, May 1, aged 79, of arteriosclerosis.

Spencer Draper Whiting, Scottsdale, Ariz.; Boston University School of Medicine, 1905; member of the American Medical Association; served during World War I; formerly associated with the Indian Service; certified by the National Board of Medical Examiners; died in the Veterans Administration Hospital April 29, aged 68, of lung abscess and subacute bacterial endocarditis.

Earl Willbre Williamson, Evanston, Ill.; University of Illinois College of Medicine, Chicago, 1919; assistant director of the American College of Surgeons; member of the advisory council to the program on hospital administration at Northwestern University; died May 10, enroute home from a medical meeting, aged 62, of heart disease.

William Edward Wilmerding † Lieutenant Colonel, U. S. Army, retired, Skyland, N. C.; University of the South Medical Department, Sewanee, Tenn., 1899; Medical Field Service School in 1921 and School of Aviation Medicine in 1923; entered the medical corps of the U. S. Army as major in July 1920; retired Feb. 28, 1938; served during World War I; died in Washington, D. C., May 8, aged 74, of benign hypertrophy of the prostate and hydronephrosis.

Walter Scott Wilson, Savannah, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1904; member of the American Medical Association; served on the local board of education; died May 27, aged 90, of myocardial failure.

William Emanuel Yount, Cape Girardeau, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1898; specialist certified by the American Board of Ophthalmology; member of the American Medical Association; died April 6, aged 74, of coronary disease.

Ross Luverne Zimmerman † Detroit; Detroit College of Medicine and Surgery, 1915; died in Mount Carmel Mercy Hospital May 23, aged 62, of cerebral thrombosis.

George Guido Zohrlaut, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the American Medical Association; died June 9, aged 69, of carcinoma of the bladder.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 24, 1948.

Difficulties of the National Health Service

Mr. Bevan, the socialist Minister of Health, has said that his object is to take money out of the doctor-patient relation, so that the poorest can obtain without payment all the medical attention that he requires, including that of the highest specialist. But difficulties have already arisen in the attainment of this deal. In the House of Commons a socialist member complained that a minority of physicians were creating a medical black market in order to obtain more money at the expense of the community. They were refusing to take on their lists persons believed to be sufficiently well off to pay high fees. Worse than this, there were physicians who refused patients because they needed extra attention. The old, the sick and the children were refused for this reason. In 1 case a man was taken but his wife was refused because she had cancer. In a more subtle form the refusal was not outright. The physician said "I will take you if you wish, but you will not get the same attention as you used to. I cannot give you the same as the paying patients, and you must come to the side entrance like the tradesmen."

In reply the Minister of Health said that the practices described were carried on by a small minority of the physicians. The vast majority were playing the game. The transition on July 5 was carried out with remarkable smoothness, impossible in any other country. A physician's selection of some members of a family and refusing another because he was a sick man was reprehensible and cut across the conception of the family doctor. The scales of remuneration for the profession were drawn up on the assumption that all the population might be in the scheme. So generous were the standards of remuneration that 99 per cent of the population would have lower incomes than the general practitioners. Where doctors were saying that a potential patient could afford to pay they were in most cases saying it to persons whose incomes were less than their own. Certain sanctions could be applied. Areas where physicians said that they were unable to take patients on their lists but insisted on their remaining private patients should be regarded as underdoctored. This means that the government could use inducements to settlements of physicians in that area. Further, it was obligatory on the physician to provide adequate facilities for his patients and it was not proper for him to provide superior facilities for his private as against his public patients.

The Minister is correct in his boast that the transition from private to socialist practice of medicine has been carried out with remarkable smoothness. But it has to be remembered the latter already existed in the panel system, which applied to the majority of wage earners but not to their wives and children or to those whose incomes were above a certain level. Also the transition has been at a time when illness is at a minimum. The test of the new system will come with the colder weather and the epidemics, from which we are usually free at this time of year.

Surgery Versus Radiotherapy in Carcinoma of the Cervix

At the Edinburgh Obstetrical Society Mr. Charles Read opened a discussion on the relative merits of surgery and radiotherapy in carcinoma of the cervix. He said that there was a division of opinion in regard to stages 1 and 2 but little debate in respect to stages 3 and 4, which were generally unsuitable for surgery. In many clinics the Wertheim operation was abandoned when radiotherapy was generally established, but at the Chelsea Hospital for Women it had been performed

continuously since Mr. Bonney introduced it in 1907. Even the surgical enthusiast had to admit that the results of radiotherapy compared favorably with those of surgery, but the question might be raised whether some of the fatalities after radiotherapy could be avoided by judicious surgery. Mr. Read suggested that there were seven indications for surgery in carcinoma of the cervix: (1) radioresistant growths proved either clinically or cytologically; (2) columnar-celled carcinoma; (3) vaginal vault stenosis; (4) the presence in addition of large fibroids or ovarian cysts; (5) associated salpingitis; (6) refusal of irradiation by the patient, and (7) pregnancy in the presence of cervical carcinoma. Considering the Wertheim operation after previous irradiation, Mr. Read expressed the opinion that although this did increase the technical difficulties the operation was justifiable in radioresistant cases, experience at the Chelsea Hospital showing a five year survival rate of 44.4 per cent in 34 stage 1 and 20 stage 2 growths.

Games for the Paralyzed

Since the war rehabilitation of the disabled has received much attention in this country. At the Ministry of Pensions Hospital, established for this purpose, a remarkable demonstration of what can be done for those suffering from spinal paralysis has been given by an archery tournament between two teams, who shot their arrows with surprising accuracy. Mr. H. A. Marquand, the Minister of Pensions, was present and said that his department was striving to bring the pensioner back as far as was possible into the normal life of the community. He was pleased to say that more than 80 per cent were employed.

Dr. L. Guttman, director of the head and spinal injuries section of the hospital, stated that it had been proved beyond doubt that many games, such as darts, billiards, snooker, skittles, badminton, net ball and even polo, can be adjusted to the disability of paralyzed persons, enabling them to compete successfully with normal persons. He had chosen archery as the most suitable sport, with the possible exception of swimming, for the paralyzed, because it had great therapeutic value.

DENMARK

(From Our Regular Correspondent)

COPENHAGEN, June 9, 1948.

The Wartime Behavior of Graves's Disease

A recent investigation by Dr. Kurt Iversen (Rosenskilde and Bagger, 1948) has brought out some curious facts concerning the behavior of Graves's disease in Denmark during the German occupation. There had been a fairly uniform rise in the incidence of this disease since 1931, but it was not till 1942 that this rise became really striking. Dr. Iversen's material consists of 2,802 patients with recently diagnosed disease admitted to the municipal hospitals of Copenhagen between the beginning of 1938 and the end of 1945. The rise in the period 1941 to 1944, inclusive, was followed by a decided fall in 1945, and the rise cannot, apparently, be explained away by reference to the growth of population, an increase in the hospital admission rate or more accurate diagnoses in the period under review.

It is, of course, tempting to associate this rise in the frequency of Graves's disease with the nervous strain entailed by the German occupation. But Dr. Iversen finds that psychic trauma could be held responsible for the onset of the disease in barely 5 per cent if one is to be guided by hospital records. Besides, it was not till 1944 and 1945 that the Danish reaction to the Germans assumed violent proportions, and by then the rise in Graves's disease had already culminated. It is also curious in this connection that in German-occupied Norway a rise in the frequency of Graves's disease in 1941 was followed by a definite fall in 1942 and the succeeding years in spite of the growing violence of the Norwegian opposition to the Germans. Then

again, in the period 1939 to 1945, there was a definite decline in the incidence of Graves's disease in German-occupied Holland and Belgium. Dr. Iversen suggests that the key to this problem may possibly be found in the lack of certain elements in the wartime dietary of Denmark, whose supply of margarine derived from the soya bean was cut off in 1941. The bitter cold of the wartime winters may also have played a part, but Dr. Iversen is wisely and cautiously tentative in his correlation of possible causes with effects.

Epidemic Diseases in Denmark in 1947

The returns published by the Danish public health authorities concerning the incidence of the epidemic diseases from year to year make stimulating reading, for in many instances they suggest questions instead of supplying answers. Let us take the incidence of some of these diseases in 1947 and compare it with the "normal," i. e., the average for several years up to 1940. And then let us ask ourselves to explain the decided difference in many cases between the two figures.

	1947	"Normal"
Typhoid.....	84	40
Epidemic cerebrospinal meningitis.....	422	65
Diphtheria.....	413	1,350
Scarlatina.....	5,138	9,300
Puerperal fever.....	108	210
Measles.....	21,320	2,700
Mumps.....	28,603	3,450
Angina tonsillaris.....	137,250	95,000
Bronchopneumonia.....	31,089	22,570
Croupous pneumonia.....	6,409	3,700
Acute infectious gastroenteritis.....	59,278	33,400
Acute epidemic hepatitis.....	9,122	2,800
Gonorrhea.....	15,267	8,250
Acquired syphilis.....	2,301	315

Note that the "normal" for the venereal diseases refers only to 1940 and not to any previous years.

This table might well figure in an examination paper set for senior medical students asked to explain in each case why the figure for 1947 differs so greatly from the "normal." The answer in the case of gonorrhea and syphilis is easy and monosyllabic—war. Perhaps the same answer is valid for typhoid. But what of the gigantic rise in the incidence of mumps and acute epidemic hepatitis? And can we flatter ourselves that the decline in the diphtheria rate reflects the success of our vaccination against it? The examinee who can explain the rise or fall of the disease in every case must be a happy blend of Hippocrates and Baron Munchausen.

Hospital Accommodation for the Aged Sick

In 1942 Professor Meulengracht drew attention to the overcrowding of the general hospitals with the aged sick, and now Dr. H. G. Davidsen has returned to the charge with a statistical analysis of the age distribution of the patients treated in the medical department of a certain Danish hospital. For, be it noted, it is the medical rather than the surgical side of a general hospital which suffers in this respect. Dr. Davidsen's analysis of the years 1930 and 1945 shows that in the interval between these two years the average duration of stay in hospital per patient has been shortened considerably, and this phenomenon is most obvious in the case of young patients, probably, and to a large extent, because of the effectiveness of the sulfonamide group of drugs. This brisk circulation of comparatively young patients means that three or four of them can be treated for every elderly patient. While the cost per bed per day on the medical side of a general hospital is kr. 25, it is only kr. 9.60 in public hostels for the aged.

Dr. Davidsen asks in effect: What good does twenty-five days' sojourn in a costly general hospital do for the aged infirm who need prolonged care not necessarily entailing the costly equipment and staffing of a general hospital? Dr. Davidsen shows that between 1930 and 1945 the number of persons over the age of 65 in Copenhagen rose from 43,000 to 62,000, and even when account is taken of the general rise of the population in the same period, this rise in the number of the aged is

impressive. He calculates that the need for institutional treatment for the aged will continue to rise till 1980 at any rate. He has set himself three aims: (1) to relieve the congestion of the general hospitals; (2) to provide the aged with medical care and nursing of good quality, and (3) to do so without waste of public funds.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, July 25, 1948.

Oral BCG Vaccination of Newborn Infants

Dr. Ariundo de Assis has published a report on the work of the Ataulpho de Paiva Tuberculosis Foundation during 1947, when 20,516 newborn infants were vaccinated on the fourth to the tenth day of life with a single dose of 100 mg. of BCG by mouth. The immunization by this method was as well tolerated as the former system of giving three doses of 30 mg. on alternate days to every infant. From the point of view of mass vaccination of newborn infants the single dose method is clearly more advantageous than the former one. The BCG vaccine used was prepared with 14 day old pellicle growths and the fluid employed was the Sauton diluted to one-fourth strength and carefully adjusted to pH 7.2. The concentration of BCG in the vaccine was 20 mg. per cubic centimeter, the vaccine having been stored at 4 C. for no longer than ten days after its preparation. To determine the first appearance of tuberculin reactivity of vaccinated children living in nontuberculous households, a sample of 2,028 infants was tested intradermally with 1 mg. and 10 mg. of old tuberculin. Reactions were considered positive only if the indurations reached more than 4 mm. in diameter after forty-eight hours. About 60 per cent of reactors were observed between the fourth and the sixth week of life of the vaccinated. The Negro infants were more particularly able to become tuberculin positive than the white. Starting from the seventh week of life an increasingly larger proportion of reactors was found. Dr. Assis expressed the belief that the single dose method of immunizing newborn infants may represent a decided step toward a final extensive program of tuberculosis prevention.

A New Culture Medium for Trypanosoma Cruzi

Drs. Gilberto de Freitas and Firmino T. Castro, of the Oswaldo Cruz Institute, Rio de Janeiro, succeeded in the preparation of a culture medium for the causative agent of American trypanosomiasis that represents a decided improvement. Starting from the hypothesis that the blood components which are responsible for the growth of flagellates in culture mediums are not proteins but less complex substances, Freitas and Castro tried the enzymatic hydrolysis of total blood, aiming at the definitive elimination of any material that may be precipitated, as well as the elimination of any growth factor eventually connected with the protein molecule. They were able to prepare a culture medium free from cells and particles and of coagulable proteins and permitting the sterilization by autoclave. Twenty-five successive subcultures were obtained without any sign of decrease of the multiplication capacity of the organism. Some preliminary counts revealed 8,000,000 organisms per cubic centimeter in tubes with 4 cc. of medium and inoculated with 25 per cent of a culture. With larger inoculums about 12,000,000 organisms per cubic centimeter can be obtained in flasks with 100 cc. of medium. The culture can be made in tubes for conservation of the samples, or in Erlenmeyer flasks for large scale production.

Personal

Dr. Achilles de Araujo was appointed professor of orthopedy and traumatology at the University of Rio de Janeiro.—Dr. Josias de Freitas was appointed assistant professor of surgery at the University of Rio de Janeiro.

Correspondence

PRESIDENTS OF THE A. M. A.

To the Editor:—I have been interested in compiling a statistical analysis of the educational background of the Presidents of the American Medical Association during the first one hundred years of its existence. From "A History of the American Medical Association" by Fishbein, I have compiled the following data relative to the medical schools from which the various Presidents of the American Medical Association were graduated. The University of Pennsylvania leads in the number of graduates, twenty of the Presidents of the American Medical Association having received their degrees in medicine from that institution. Harvard comes second with ten graduates, followed by the College of Physicians and Surgeons in New York with seven and Jefferson Medical College with six. Northwestern Medical College, Bellevue Hospital Medical College, Rush Medical College and the University of Louisville each graduated four subsequent Presidents of the American Medical Association. The remaining Presidents were graduated from thirty-three other schools of medicine. Several of these are now extinct, and several others have merged with other educational institutions. It is of interest to note that two of the Presidents of the American Medical Association graduated from the Medical School of the University of Edinburgh, while one President received his degree at the University of Bonn in Germany.

M. LOWRY ALLIN, M.D., Salt Lake City.

TREATMENT OF ASTHMA

To the Editor:—In the panel discussion of the "Treatment of Asthma" in THE JOURNAL, May 29, 1948, statements were made by Dr. Piness concerning penicillin aerosol which need to be corrected. It is my belief that penicillin aerosol is of definite value in the treatment of infective asthma, which need not necessarily be limited to the complications of bronchiectasis or pulmonary abscesses. This opinion is based on extensive use of aerosol therapy for three years, in the treatment of respiratory infections including infective asthma. Allergists who deny the usefulness of this method of treatment have either attempted to treat asthma of the noninfective type in which penicillin is definitely contraindicated and have, therefore, had failures, or given penicillin aerosol during an attack of asthma when the vital capacity is so reduced that the aerosol is not effectively inhaled.

Once a decision has been made to treat with penicillin aerosol, it is important to administer this aerosol only after preliminary bronchodilatation, to obtain maximum utilization. In our experience, this can be achieved by the inhalation of aminophyllin in aerosol form as produced by a combined steam generator and aerosolizer previously described in THE JOURNAL, and which has been a simple and inexpensive means of producing a variety of aerosols without the need of costly oxygen.¹ The steam itself administered to these patients has, in some instances, therapeutic value.

Another reason for repeated reports of failures has been, in my opinion, the inability to produce aerosols of long duration. Aqueous aerosols of penicillin do not "live" long enough to be effectively utilized. An aerosol produced, however, of penicillin dissolved in propylene glycol can last an hour under certain conditions, which has not only increased its efficiency but has enabled us to utilize a tent, a breathing box and a closed chamber

(the bathroom at home) for the maximum utilization of the aerosol, in the treatment of sinorespiratory infections.²

Not all cases of truly infective asthma respond favorably to penicillin aerosol—the type of organism concerned must be penicillin sensitive, and adequate dosage must be given. Nevertheless, so many patients do respond favorably as to make this a major form of therapy. As for the unfavorable reactions referred to by Dr. Piness, in our experience these have occurred in less than 10 patients of over 300 treated. In only 1 of these patients did a severe reaction develop—giant urticaria with joint involvement. The majority were mild urticarias or contact dermatitis. "Black tongue" reactions were not encountered in these cases.

SAMUEL J. PRIGAL, M.D.,

New York.

HYPERTENSION

To the Editor:—The concept of the pathogenesis of hypertension editorially reviewed in THE JOURNAL, May 10, 1948, however attractive from a clinical aspect, rests, unfortunately, on a tenuous chain of demonstrations. Among the experiments on which Heinbecker's new and elaborate concept is based, two facts seem to have been confirmed and to withstand critical appraisal: (1) neurohypophyseal deficiency resulting from total or partial denervation of the gland and (2) nephrotoxic and vascular lesions due to desoxycorticosterone. On the other hand, seven bases for the concept have not yet had adequate experimental support: (1) that posthypophyseal deficiency stimulates the eosinophils of the pars distalis, (2) that specific cardiotropic and nephrotrophic effects may be ascribed to the eosinophils, (3) that adrenocorticotropin induces the secretion of desoxycorticosterone-like compounds, (4) that deficiency of the posthypophysis sensitizes to pressor agents, (5) that desoxycorticosterone causes a constriction of the efferent glomerular arterioles, (6) that the efferent arteriolar vasoconstriction leads to liberation of renin and (7) that renin is the cause of hypertension.

The concept reviewed is an expansion of that of Selye (*J. Clin. Endocrinol.* 6:117, 1946), which deals with anterior pituitary, adrenals and kidney. Heinbecker's hypothesis aims at the integration into this pattern of the central nervous system, (cortex, hypothalamic nuclei and neurohypophysis). However, until the premises have been confirmed, the conclusions must remain as thought-provoking speculations only.

GEORGES MASSON, Ph.D.,

Cleveland Clinic Foundation.

MUSCULAR CRAMPS AFTER "MERCUPURIN"

To the Editor:—A word of caution should be sounded relative to the letter by Perry S. MacNeal, M.D., of Philadelphia, concerning the article "Muscular Cramps After 'Mercupurin,'" appearing under Queries and Minor Notes in THE JOURNAL, June 26, page 824.

Dr. MacNeal's splendid suggestions concerning the occurrence of muscular cramps and paresthesias following the use of "mercupurin" are timely. However, he advises the administration of a 10 per cent solution of calcium gluconate intravenously. One must remember that many of the patients receiving "mercupurin" have also been on digitalis administration and the combination of the two may sometimes result in sudden death. Drs. John O. Bower and William E. Robertson of Philadelphia were two of the first physicians to point out the extreme potential danger of sudden death resulting from the administration of calcium intravenously during digitalization.

HAROLD F. ROBERTSON, M.D., Philadelphia.

1. Prigal, S. J.: The Production of Aerosols from Medicated Solutions: A Combined Steam Generator and Aerosolizer, *J. A. M. A.* 131: 392, 1946.

2. Prigal, S. J.; McGavack, T. H.; Speer, F. D., and Harris, R.: Aerosol Penicillin: Blood Levels Obtained by Inhalation of Aerosols Produced by a Combined Steam Generator and Aerosolizer, with the Use of Propylene Glycol, Tents and a Breathing Box, *J. A. M. A.* 134:932, 1947.

Bureau of Investigation

KYRON IS INDEBTED TO SCIENCE

All over the United States recently newspapers and magazines have been carrying an advertisement headed "Science Discovers New Easy Way to Lose Fat." A subheading says "New Condensed Food Tablet Reducing Plan Proves Amazing Power to Help Curb Excess Appetite!" Another says "New Condensed Food Tablet Proves Amazing Power to Safely Reduce Fat. Requires No Starvation . . ."

This double-talk refers to a so-called reducing preparation consisting of certain vitamins in one tablet and amino acid and a digestive in another, plus a booklet which the customer presumably is expected to read and follow. A series of menus is offered which, at first, averaged approximately 1,000 calories per day. A later edition of the booklet, however, called for between 1,200 and 1,600 calories per day. The dietary needs of the average sedentary woman are approximately 2,000 calories a day; perhaps the sellers of "Kyron" should stick to the publishing business, rather than selling vitamins and digestive pills.

The advertisements represent that a "tiny food tablet works wonders for fat folks because, when used as directed in the Kyron Reducing Plan, it helps appease excess hunger [Italics ours.—Ed.], and at the same time works to counteract nutritional deficiencies often caused by reducing." The Council on Pharmacy and Chemistry of the American Medical Association recently considered "Kyron" and similar other reducing plans, candies and mixtures. They concluded that such preparations do not constitute scientific methods for the reduction of excess body weight caused by overeating, and that they have no place in scientific medicine, by reason of the fact that they are in the nature of placebos. Included in such a category are the preparations "R.D.X.," "Ayds," "Meltoway" and some others.

The prime movers in the promotion of Kyron are two lawyers and an ex-restaurant owner. They are aided and abetted by a toxicologist and consulting chemist who has given them a testimonial wherein it is stated:

"I proceeded to formulate a low calory diet, a copy of which is attached hereto . . .

"It is my opinion that the diet accompanying the product Kyron would not in and of itself be sufficient to sustain and maintain good health. It is also my opinion that the diet followed in connection with the taking of Kyron tablets will sustain and maintain good health except if followed by persons afflicted with an abnormal condition. Of course, a person afflicted with an abnormal condition should always consult a physician."

Another statement to aid in the promotion was from a so-called "research and testing laboratory." This read in part:

"This is to certify that World-Wide Laboratories, Inc. [now the Continental Pharmaceutical Corporation], distributors of the product Kyron, retained us over six months ago to create a formula consisting of vitamins, minerals and proteins to the extent that the same could be used as a dietary supplement taken in connection with a prescribed diet to be used by persons who desire body weight reduction . . .

"Our research in the field of obesity, which naturally carried us to opinions, statistics and surveys of the leading authorities in the field, left us no conclusion other than that to bring body weight reduction about, a diet must be followed and with that diet the person must replenish the loss of the essential vitamins and minerals in some manner or form . . .

"For your information we have conducted tests by using the product Kyron on rats and the results of our tests were very satisfactory and showed body weight reduction. No ill effects in the conduct, manner, nervous reactions or any other symptoms which might be considered harmful, were found or displayed . . ."

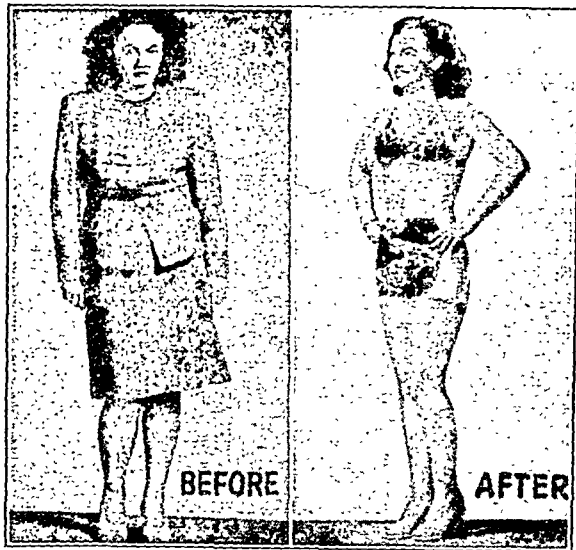
The appropriate governmental agencies have delayed too long the necessary steps to protect the public from being victimized by these purveyors of tablets. Although advertised as wonderful in the reduction of excess body weight, they are merely adjuncts to highly restricted diets.

The Post Office Department has been active in bringing fraud orders against the purveyors of vitamin pills and fancy reducing pills, branding them as a device to obtain money under false

pretenses, thereby using the mails to defraud. Under date of March 11, 1946, the Postmaster General announced that a fraud order had been issued against the Nu-Dyne Company, Inc., Dr. J. Carter Fisk, J. Carter Fisk, M.D., and Dr. J. Carter Fisk, Chief of Staff, and their officers and agents as such. The product was advertised as follows: "Now! You Too Can Reduce This Safe, Doctor's Way! Dr. J. Carter Fisk Will Show You How to Lose 15 lbs in 7 weeks With the Doctor's Own Proven Safe Reducing Plan. No Drugs!—No Strenuous Exercise! . . . without starving yourself . . . positively contains no harmful reducing drugs."

Another fraud order was issued against the Vita-Slym Company, which firm, under a variety of names, including V-Tabs Company, promoted vitamin tablets called "V-Tabs." Some of the advertising for these tablets indicated: "By the V-Tab method you need not go on a starvation diet, take habit-forming cathartics or do tiring exercises. Simply reduce the intake of fat-producing elements with the help of V-Tabs which not only reduce your appetite so that you don't want to eat excessively, but also take the place of many fat-producing foods by fortifying your diet with needed minerals and vitamins."

FROM CURRENT KYRON ADVERTISING



CHICAGO MOTHER REDUCES 35 POUNDS IN 7 WEEKS. That's the report of Mrs. Kathryn Walker, 3332 Potomac Ave., Chicago. Photo at right is Mrs. Walker as she looks today. Photo at left is artist's conception of Mrs. Walker when she was overweight.

Artists do imagine, don't they?

In another fraud order, dated Jan. 21, 1947, the Post Office Department denied use of the mails to the A. B. C. Plan Company. This firm advertised: "How would you like to lose 5, 10, or even 20 pounds of ugly fat in a short time? How would you like a slimmer, more graceful, alluring figure without giving up the things you like to eat? Without strenuous exercise, without dangerous drugs?"

In August 1947 another fraud order was issued by the Postmaster General against the Beverly Hills Medical Laboratory and its officers as such at Beverly Hills, Calif. This firm had the "Formula 17 Plan." It was advertised, complete with a picture of a shapely young lady, as "Prominent Beverly Hills Physician Reveals Time-Tested Reducing Plan! Reducing Secrets of Hollywood Movie Actresses. The same successful plan that has cost Hollywood celebrities hundreds of dollars is now brought to you at low cost by their prominent Beverly Hills Physician. It is easy to take off those extra pounds. No harmful drugs or strict diet to leave you craving for food . . ."

The reports of the proceedings leading to these fraud orders show the similarity between these plans and those on the market now, such as "R.D.X.," "Ayds," "Kyron" and "Meltoway." These products are merely the tangible materials in psychologic schemes to obtain the money of the overweight woman.

Medical Economics

THE ISSUE OF COMPULSORY HEALTH INSURANCE¹

A Review by Frank G. Dickinson, Ph.D., Director,
Bureau of Medical Economic Research

When a physician with wide experience in health matters and an eminent student of governmental administration undertake, under the auspices of an outstanding research organization, the task of advising a committee of the United States Senate on two proposals for medical care of the people, an important contribution to medical economics can be expected. This is what George W. Bachman, M.D., Lewis Meriam, Ph.D. and the Brookings Institution have accomplished in a large measure.

In May 1947 the Brookings Institution undertook a study of compulsory health insurance at the request of Senator H. A. Smith, chairman of the subcommittee on health of the Senate Committee on Labor and Public Welfare. Two major proposals for national participation in the provision of individual medical care were before the committee. The first of these proposed federal grants-in-aid to the states to assure adequate medical care for the indigent and medically indigent. The second proposal was for the establishment of a compulsory health insurance system by the national government, with federal regulation and control of the providers of medical services. The Brookings report includes a study of the economic, social and administrative issues involved in the plans; an examination, appraisal and analysis of statistical data bearing on those issues; a discussion of questions which cannot be answered precisely by factual evidence, and a set of conclusions and recommendations given the Committee.

The first major issue considered in the report is the health of the American people. Evidence from prewar mortality statistics discloses a substantial reduction in the past forty years in death rates from typhoid, diphtheria, tuberculosis, infant diseases and childbirth. These reductions are attributed to a combination of medical care, public health work and popular education and "do not suggest basic defects in the American system." International and interstate comparisons lead to the conclusion that, although forty years ago the United States was far behind the world leaders, the health of its white population is now probably better than that of any other great nation. The few countries with generally lower mortality rates are equalled by several of our states with larger populations. Mortality figures also show that nonwhites in the United States have materially poorer health than the whites, but the evidence indicates that this is due more to economic, social and cultural conditions than to inadequate medical care. Despite the claims of critics of the American system of medical care, selective service data do not contradict the conclusions drawn from mortality records. A critical analysis of draft statistics in the report shows them to be unreliable as a measure of national health or of the medical needs of the country.

Statistics on illness and medical care are taken from the survey by the Committee on the Costs of Medical Care in 1928 to 1931 and the National Health Survey of 1935-1936. Both studies locate the chief difficulty in the provision of medical care among the low income groups and, within these groups, among children under 15 and aged persons. Although they permitted wide differences in interpretation, the surveys "did not, however, seem to disclose large volumes of serious illnesses that did not receive medical care." An examination of income and expenditure figures for 1941 reveals that for all classes with incomes above \$1,000, expenditures for automobiles exceeded those for medical care. From such data the Institution concludes that the large majority of American families have capacity to pay for adequate medical care if they are willing to give it a priority above that for certain nonessential or luxury items. Moreover, many of those now unable to pay

for adequate medical care would have to be provided for by philanthropic or public funds under compulsory health insurance because they would be unable to pay the required premiums.

The Brookings report recognizes the limitations of county physician-population and hospital bed-population ratios as indexes of the adequacy of medical service in rural areas. Residents of areas with low ratios may receive medical care from physicians and hospitals in neighboring counties. An attempt now being made to define "medical service areas" and "medical service centers" similar to the trading areas and centers used for commercial purposes promises a clearer picture of the medical care services actually available to the population of a given area.

With reference to the over-all supply of physicians, the report considers it probably sufficient to meet present consumer demand but inadequate to meet all the medical needs of the American people. The report estimates a shortage of about 50,000 dentists at the present time and predicts that the nursing shortage may be as great as 130,000 by 1950. Basing estimates on standards for bed occupancy and capacity set by hospital authorities, some 207,539 additional beds are needed for general and mental hospitals and tuberculosis sanatoriums. Adding the 25 per cent of the 1,468,714 beds now available which are considered obsolete by the United States Public Health Service, a total of 559,128 additional beds would be necessary to meet the hospitalization needs of the American people. These figures lead to the conclusion that the adoption of compulsory health insurance would not immediately make adequate medical care available to all, because the supply of trained personnel and facilities would be insufficient to meet the demand.

Although the Brookings study makes no original estimate of the costs of compulsory health insurance, it cites several factors which would tend to increase medical care expenditures. Insured persons could be expected to make unnecessary demands on the medical care services; some practitioners and agencies would attempt to use the system for their own financial advantage, and administrative expenses would be heavy. If payment is on a fee for service basis, thousands of government employees would be needed to check, audit and investigate claims. If a per capita method is used, the government must allocate each insured person to a general practitioner and must investigate complaints by patients, with perhaps a hearing, decision, penalty and enforcement. A salary system would involve all the problems of government personnel administration, including appointment and promotion, fixing of salary, hours and leaves and disciplinary action.

Experienced members of the Brookings Institution staff have considered the administrative aspects of compulsory health insurance and its effect on practitioners and on the quality of medical service. The conclusions drawn from discussions of these questions are that compulsory health insurance would necessitate a high degree of governmental regulation and control over personnel and agencies providing medical care; that it is improbable that politics could be eliminated from medical care supplied under a governmental system; that the injection of the government into the relationship between practitioner and patient might impair the quality of medical care and that difficulties in the administration of a fee for service system would probably result in the adoption of the more highly socialized per capita or salary system. "It seems questionable whether a country which once embarks on compulsory insurance can turn back but must attempt to remedy defects by more complete government control and administration."

The recommendations in the Brookings report are reminiscent of the majority opinion of the Committee on the Costs of Medical Care. In the judgment of the Institution it would be wise to leave to the individual states the question of compulsory health insurance and to permit each community to make its own arrangements for the provision of medical care. Experimentation would probably lead to a diversity of plans in different sections; if a single pattern were to develop it could then be adopted on a national basis. The Institution recommends that at present the national and state governments might well confine their activities to (a) research and developments in the field of public health, (b) health education at the school level, (c) teaching of preventive medicine, (d) assisting

1. Bachman, G. W., and Meriam, Lewis: *The Issue of Compulsory Health Insurance*, Washington, D. C., the Brookings Institution, 1948, pp. 271.

in the acquisition of facilities and the training of personnel and (c) providing care for the indigent and medically indigent. Adult educational campaigns should be left to voluntary organizations which have enlisted the cooperation of leading laymen. "It must be remembered that good health is not exclusively a matter of medical care; it also impinges upon causative factors that are nonmedical, such as food, shelter, vice and crime, transportation, and industry. Its maintenance depends also upon the intelligence, interest, and co-operation of individuals, families and local communities."

In order that the Brookings report might be of use to the Senate Committee, it had to be prepared in less than a year. Had time permitted, the Institution might have been able better to organize its material and to include more recent statistical data. However, the progressive trend in American medical care is clear; current data would undoubtedly reinforce the conclusions drawn from the study. The discussions of questions not subject to objective answers are well thought out, especially those relating to the administrative problems involved in compulsory health insurance. Insight into such problems gained in previous studies of government and its administration has enabled the Institution and its staff to foresee many of the pitfalls conveniently overlooked by proponents of compulsory health insurance. Certainly the Brookings report throws considerably more light on the practical issues of compulsory health insurance than do the polemic or idealistic contentions of its supporters.

The organization and some of the material reveal haste in preparation. This was forced on the authors, as the book was printed less than twelve months after the request to write it was made in May 1947. Considering the short time available, the volume is well organized and the materials are well selected. The data on medical economics are abundant, but the quality of much of the data is inferior. The authors could have been more discriminating in their appraisal of data on family expenditures for medical care (pp. 181-190). It has been proved that these expenditures are higher percentages of the budgets of the low income family (excluding from consideration both extremes in family income distributions). It has been demonstrated that from birth to death medical needs are described by a U-shaped curve. For males this curve descends rapidly from infancy through adolescence and middle age and rises rapidly later after about age 60. For females the curve is about the same except that it rises during the child-bearing period and is generally higher between infancy and old age. The authors fail to recognize that the age and sex distribution must be the same in all families in each income class in any sample before one can conclude that, within limits, medical care expenditures are not a constant percentage of family income. These U-shaped curves for both sexes strongly suggest that young parents with young children experience the maximum medical needs.

The young fathers in their twenties or thirties have not reached their maximum earning years, for that also follows a curve—an age-earnings progression. The maximum portion of the family budget spent for medical care as the family passes through time is likely to occur when the medical care demand curves are high and when the breadwinner is still on his way up the age-earnings curve. Hence data on portions of family budgets spent for medical care seem to prove that high income families are favored. The authors, who were otherwise discriminating in their use of data, failed to note that such figures may merely show that the peak years of medical expense coincide with the years of low earnings for the young family. The business cycle behavior of medical care expenditures suggests that medical care is both a necessity and a luxury; apparently some of the expenditures for medical care are of the luxury type. These data and a considerable portion of the other standard data used by the authors require extreme caution for proper interpretation.

The contribution of this volume is somewhat greater on the side of administration than on the side of analysis of statistical information. Nowhere has there been a clearer insight into the administrative difficulties with which a program of federal compulsory sickness insurance would be fraught. The relationship of physician to patient would confront governmental

agencies with administrative problems of a different order from those created by any previous exercise of the police power of government. Your reviewer believes that the authors' analysis of administrative problems posed by the two proposals which they were commissioned to examine constitutes their lasting and great contribution to the literature of medical economics.

THE HEALTH OF LOW-INCOME FARM FAMILIES IN SOUTHEAST MISSOURI¹

In 1941 a study of the health of the farm families in Southeast Missouri was made by physicians and dentists under the direction of the medical advisor of the Farm Security Administration. Only those who borrowed funds from the Farm Security Administration were examined. This group included 4,124 persons. Among them, males and females were divided almost evenly, while Negroes represented one third of the group.

The physicians and the dentists found a total of 14,700 defects and diseases among all persons examined, which is an average of 3.8 defects per person. Only 5 per cent were without detectable defects. The most common type of disease was that of the respiratory system, causing one third of the defects. Diseases of the genitourinary system accounted for one sixth of the defects diagnosed, and the diseases of nutrition and endocrine glands also caused one sixth of the defects. There was much need for dental care, and one half of the population needed fillings in their teeth.

Considering the age of the population examined, the older persons had more diseases than the young, and the majority of the population were young since they married at an early age and the birth rate was high. The average number of defects increased from 1.5 for children under 5 years of age to 6.3 for persons 45 years and over. Diseases of the older group include diseases of the circulatory, digestive and nervous systems, while the diseases of the younger group mainly involved tonsils and adenoids.

Women had a larger number of defects than the men, especially in the case of diseases of the genitourinary system. This was also true for diseases of the circulatory system. The most predominant diseases in men were those of the digestive system.

Negroes were reported with about the same number of cases as white persons except when the families were considered as a whole. When this was the case, they exceeded the white persons mainly because the Negro families consisted of more children. The most prevalent diseases among the Negroes were those of nutrition and the endocrine glands. Anemia was twice as frequent in Negroes as it was in white persons.

After the study was completed, the physicians and dentists made recommendations as to the care that should be given. There were 8,595 recommendations made in all, which gave an average of about 2 for each person. Only one tenth did not require recommendation, and this fraction consisted mainly of children. Dental care was the major recommendation, 34 per cent, and next in line was the recommendation for surgical treatment, 24 per cent. Dental care included cleaning of teeth, teeth extractions and fillings. About 95 per cent of the operations necessary were appendectomies, adenoidectomies and circumcisions. The eyesight of these people was not too poor, and only 6 per cent of the recommendations were made for these corrections. At least 1 member in every family, except 1, needed some medical attention. There were 843 families, and there were about 4 or more recommendations made for 95 per cent of the families.

These farm laborers and renters are in the low income bracket and as a result spend little money for their health. Some are medically indigent, although the authors present no analysis of family expenditures. Even if these people could and would spend the money, the facilities available are not adequate to meet all the needs for the group in this territory. The authors stress need, not demand, for medical care; demand

1. The Health of Low-Income Farm Families in Southeast Missouri. University of Missouri, College of Agriculture, Agricultural Experiment Station, E. A. Trowbridge, Director. August 1947, Research Bulletin 410.

comprises desire plus the willingness and ability to pay. These results indicate that better health facilities are required for these people as well as other groups in the same circumstances if all the needs are to be met. Increased facilities could not, of course, provide more medical care unless demand increased. The authors considered the question of financing the program outside the scope of their study.

[Comment: Interesting would be comparison with a similar group in an industrial area. One wonders as to the criteria that determined the need for operations on the appendix that had been delayed or neglected.—Ed.]

Council on Medical Education and Hospitals

GRADUATE TRAINING PROGRAMS ACCEPTABLE BY THE AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY

The Council on Medical Education and Hospitals has limited its approval of programs for graduate training to those offered in connection with general or special hospitals. The following information is published however, at the request of the American Board of Psychiatry and Neurology to indicate the availability of a special type of training which is acceptable to the board and carries full credit toward certification by that board.

Requirements for Acceptance

In order to facilitate the arrangements for training in child psychiatry (which constitutes a major aspect of modern psychiatry), the American Board of Psychiatry and Neurology will accept one year of training in psychiatric clinics for children which may or may not be a part of a hospital approved for residency training, provided such a clinic gives adequate supervision and instruction for full time training during the entire third year of the required three year formal training period. For the purpose of evaluating such clinics, the following conditions and criteria are deemed essential by the American Board of Psychiatry and Neurology:

1. That the clinic have a full time medical director, psychologist, and social worker qualified by training and experience in child psychiatry and allied fields to supervise the training of residents.
2. That the major portion of such training be devoted to therapy adequately supervised by this qualified staff.
3. That the service and teaching activities of the clinic be integrated with those of the community and its social agencies.
4. That clinic work be supplemented by seminars, case conferences, journal clubs or other opportunities for the discussion of the basic principles involved in outpatient work with children and parents, teacher, public health and welfare agency personnel.
5. That such a training clinic be well established in the community with a qualified staff that has operated together long enough as a team to insure stable and sound functioning.
6. That the senior members of the clinic team show evidence of previous experience in the teaching of psychiatry in general, child psychiatry in particular, and their allied fields.

These criteria set forth by the Board pertain more particularly to community-sponsored clinics offering full time training in child psychiatry during the third year of formal residency training. If these clinics are affiliated with hospitals already maintaining approved programs, separate approval is not required unless warranted on the basis of their meeting all requirements for straight fellowship training in child psychiatry.

The following clinics are acceptable to the American Board of Psychiatry and Neurology as qualifying under these provisions.

Center	Director
Children's Psychiatric Division, Langley Porter Clinic, San Francisco.....	Dr. Stanislaus Szutek
Bureau of Mental Hygiene, 1179 Main St., Hartford, Conn.....	Dr. James M. Cunningham
Louisville Mental Hygiene Clinic and Child Study School, 610 South Floyd Street, Louisville, Ky.....	Dr. Spafford Ackerly
The Guidance Center, 1737 Prytania St., New Orleans.....	Dr. Milton E. Kirkpatrick
The Psychiatric Clinic of the Mental Hygiene Society of Maryland, Baltimore.....	Dr. H. Whitman Newell
Children's Center, 244 Townsend St., Roxbury, Mass.....	Dr. Marian Putnam and Mrs. Beata Rank, co-directors
Judge Baker Guidance Center, 38 Beacon St., Boston.....	Dr. George E. Gardner
Amherst H. Wilder Clinic, 279 Rice St., St. Paul.....	Dr. Hyman S. Lippman
Central Clinic, Cincinnati General Hospital, Cincinnati.....	Dr. Maurice Levine
Child Guidance Clinic, 1711 Fitzwater St., Philadelphia 46.....	Dr. Frederick H. Allen
Pittsburgh Child Guidance Clinic, 3004 Victoria St., Pittsburgh 13.....	Dr. Harry M. Little
Children's Service Center of Wyoming Valley, 335 South Franklin St., Wilkes-Barre, Pa.....	Dr. J. Franklin Robinson

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written*, Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral*, Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*, Chicago, Oct. 6. *Written*, Various Centers, January 1949. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral*, Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF RADIOLOGY: Nov. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

BOARDS OF MEDICAL EXAMINERS

ALASKA: * *Examination*, Juneau, Sept. 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: *Eclectic Examination*, Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral*, Los Angeles, Nov. 20-21. *Written*, Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatenia, 1020 N Street, Sacramento 14.

COLORADO: * *Endorsement*, Oct. 5. Final date for filing applications is Sept. 18. Sec., Walter W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * *Examination*, Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

CONNECTICUT: * *Homeopathic*, Nov. 9-10. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity*, Washington, Sept. 13. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

GEORGIA: *Examination*, Atlanta, Oct. 12-13. *Endorsement*, Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

INDIANA: *Examination*, Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination*, Baltimore, Dec. 14-17. *Endorsement*, At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore.

MINNESOTA: Minneapolis, Oct. 19-21. Sec., Dr. J. F. Daluis, 230 Lowry Medical Arts Bldg., St. Paul 2.

MONTANA: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW HAMPSHIRE: Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. J. S. Wheeler, Room 107, State House, Concord.

NEW JERSEY: *Examination*, Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

NEW YORK: *Examination*, Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 23 South Pearl St., Albany 7.

OHIO: *Examination*, Columbus, Dec. *Endorsement*, Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * *Examination*, Portland, Jan. 1949. *Endorsement*, Oct. 15-16. Final date of filing application is Oct. 1. Exec. Sec., Mr. Howard I. Hohlt, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Examination*, Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: *Examination*, Santurce, Sept. 7-11. Sec., Mr. Luis Cucto Coll, 22 Purada, Box 3717, Santurce.

RHODE ISLAND: * *Examination*, Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Endorsement*, Sept. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Pierre.

TENNESSEE: * Sept. 29-30. Sec., H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, 1305 Amicable Bldg., Waco.

VERMONT: Feb. 1949. Sec., Dr. F. J. Lawless, Richford.

VIRGINIA: *Examination*, Richmond, Dec. 3-4. *Endorsement*, Dec. 2. Sec., Dr. K. D. Graves, 3015 Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

WYOMING: *Examination*, Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau. Last week in Aug. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination*, Tucson, Sept. 21. Sec., Mr. Francis A. Roy, Univ. of Arizona, Tucson.

ARKANSAS: *Examination*, Little Rock, Oct. 5. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination*, Denver, Sept. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

CONNECTICUT: *Examination*, Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination*, Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.
FLORIDA: *Examination*, Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.
IOWA: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.
MICHIGAN: *Examination*, Ann Arbor and Detroit, Oct. 8-9. Sec., Mrs. Eloise Lefebvre, 1510 West Allegan St., Lansing.
MINNESOTA: *Examination*, Oct. 5-6. Sec. Treas., Dr. Raymond N. Brier, 105 Millard Hall, Univ. of Minnesota, Minneapolis.
NEBRASKA: *Examination*, Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.
OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.
OREGON: *Examination*, Portland, Sept. 4. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.
SOUTH DAKOTA: *Examination*, Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.
TENNESSEE: *Examination*, Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.
WISCONSIN: *Examination*, Madison, Sept. 25. Final date for filing application is Sept. 18. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospital Records as Evidence of Cause of Accident.—The plaintiff sued for damages for injuries alleged to have been caused by the negligence of one of the defendant's bus drivers. After a verdict for the plaintiff the defendant filed a motion for a new trial which was heard in the superior court of Delaware at New Castle.

The plaintiff testified that while he was attempting to board a bus operated by the defendant the door was closed on his ankle and the bus started, throwing him to the ground with a sharp twist to his ankle. There were no witnesses to the accident. The defendant, while not denying the injury, contended that the plaintiff was hurt, not in attempting to board its bus, but because he twisted his ankle while walking at or near the bus stop. In support of this contention, the defendant offered in evidence certain hospital records which contained a statement purportedly made by the plaintiff that he had broken his ankle by twisting it while walking along the sidewalk. The hospital intern who treated the plaintiff for his injuries on the night in question was called to the stand to qualify the hospital report for admission under the Uniform Business Records Act.

The plaintiff's counsel objected to the admission of that part of the hospital record containing the words "Patient states he twisted ankle while walking along street" for the reason, among others, that such language did not constitute an entry made in the regular course of the business of a hospital.

The court pointed out that in theory regular entries constituting the business records of a corporation or institution, and otherwise conforming to the safeguards set out in the act, are said to be so stamped with the reasonable guarantee of trustworthiness as to justify their admission in evidence as an exception to the hearsay rule. The court then proceeded to discuss a number of cases discussing the applicability of this doctrine to hospital records and said that these opinions disclosed near uniformity of judicial thought in at least two respects: (a) all matter contained in a business record is not admissible *per se* merely because regularly entered in accordance with some preconceived policy established for the conduct of a particular business and (b) to be admissible, the subject matter of the entry must be within the scope, or course, of the business, though some courts are more liberal than others in defining what the scope of a particular business may be. Thus, the mere fact that the statement in this case was regularly entered on a standard hospital form under the heading "state where and how this accident happened" would not of itself render admissible all matter entered thereunder. The rule running through the cited cases seems clearly to be this, said the court, that admissions by patients against their interests, regularly entered in hospital records, may be received in evidence at a trial only if so related to the complaint or injury involved as to facilitate prompt and intelligent diagnosis and treatment. The plaintiff's statement to the effect that he twisted his ankle while walking along the street was, said the court, "pathologically germane" to the injury which necessitated his attendance at the hospital. It is reasonable to suppose that the words "while walking along the street" were not merely descriptive of the injury and thus altogether irrelevant, but aided the attending physician to some extent in diagnosing and treating the fracture. The knowledge that the injury had occurred from a twist while walking ruled out the possibility of the ankle having been crushed. The physician testified that it was necessary for him to know how the injury occurred in order properly to treat it. In the instant case this seems particularly true because at the time of the plaintiff's admission to the hospital a roentgenologist was not available. Immediate treatment of the injury therefore had to be given without benefit of roentgenogram, and the statement as to how the accident happened was of more than usual importance. Hence the court concluded that the statement was properly recorded within the scope of hospital business. Accordingly the new trial requested by the defendant was granted.—*Watts v. Delaware Coach Co.*, 58 A. (2d) 689 (Del., 1948).

Medical Motion Pictures

FILM REVIEWS

The Physiology of Normal Menstruation. 16 mm., color, sound or silent, 810 feet (1 reel), showing time twenty three minutes (sound speed). Prepared in 1948 by Somers Sturgis, M.D., Associate Surgeon, Massachusetts General Hospital, Boston, and John Rock, M.D., Free Hospital for Women, Brookline, Mass. Produced by Sturgis-Grant Productions and sponsored by Schering Corp., Bloomfield, N. J. Procurable on loan from Medical Service Department, Schering Corporation, Bloomfield, N. J.

This film explains the physiology of normal menstruation clearly and concisely. It so describes the relation of the five principal hormones involved in the menstrual process that the listener can absorb and retain the information.

An introductory statement of what is to be discussed in the film is followed by animated drawings explaining the effect of the three anterior pituitary hormones—namely, the follicle-stimulating hormone, the luteinizing hormone and luteotropin—on the ovary. The entire relationship and the effect on the uterus of the two ovarian hormones, estrogen and progesterone, are reviewed.

The presentation plus the reviews enables one to fill in the gaps in his understanding of the rather confusing interplay of the hormones. The relationships of these hormones are not completely clear to experts in this field. To the average physician they are frequently confusing. This film should be informative to the majority of practicing physicians, medical students and the nursing profession. It could also be used as the basis of an advanced lecture on the more detailed hormonal ramifications of menstrual physiology, or in a similar manner as the basis for discussion of the clinical aspects of menstrual disorders. The authors have combined the art of teaching and the art of visual education very well.

NEW MOTION PICTURE ADDED TO THE A. M. A. LIBRARY

The Story of Menstruation. 16 mm., color, sound, 400 feet, showing time ten minutes. Now available on a loan basis through the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

This film in colored animation and accompanied by carefully worded commentary begins by indicating the manner in which the pituitary gland governs first the growth of the body and later the function of the ovaries. Next it shows ovulation and the passage of the unfertilized ovum. The thickening and the subsequent menstrual shedding of the endometrium are shown, followed by suggestions as to bathing, diet, exercise and other hygienic measures in relation to menstruation.

The production is intended for showing to groups of adolescent girls in the 14 to 18 year age range to explain the physiology of menstruation with some practical corollaries.

Physicians called upon to address lay audiences such as Girls' School, Parent-Teachers' Association, Women's Club, etc., may find this film a useful adjunct to their lectures.

(A review of "The Story of Menstruation" was published in THE JOURNAL, 133:1033 [April 5] 1947.)

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

American Journal of Clinical Pathology, Baltimore

18:273-348 (April) 1948

- *Clinical, Functional and Histologic Responses of Fatty Metamorphosis of Human Liver to Lipotropic Therapy. M. Franklin, M. R. Salk, F. Steigmann and H. Popper.—p. 273.
- *Evaluation of Papanicolaou's Method of Cancer Diagnosis. Jane B. Wiles and C. A. Helliwig.—p. 283.
- Use of Wright's Stain in Diagnosis of Malignant Cells in Bronchial Aspirations. L. W. Diggs.—p. 293.
- Trisodium Phosphate in Diagnostic Culture of Tubercle Bacilli. H. J. Corper and W. Bain.—p. 303.
- Pathology of Hypersplenism. E. von Haam and A. J. Awany.—p. 313.

Lipotropic Therapy in Fatty Metamorphosis of Liver.—The 15 patients selected for this study by Franklin and his associates had enlarged livers with moderate to severe fatty infiltration as proved by initial needle biopsy. Group I consisted of 5 persons without cirrhosis, the severe fatty changes in the liver being presumably due to disturbed nutrition. Group II consisted of 10 patients with fatty cirrhosis. Most of these presented some of the usual signs and symptoms of cirrhosis such as ascites, jaundice, splenomegaly, spider nevi and gastrointestinal disturbance, as well as laboratory findings of impaired hepatic function. Different types of lipotropic therapy were employed; namely, cystine plus choline, methionine and diet high in protein and in vitamin B complex. Clinical improvement, as evidenced by subjective and objective findings, was noted in almost all patients after "lipotropic" therapy. Functional improvement was evident by all tests performed except the thymol turbidity and total cholesterol tests, results of which remained abnormal. Disappearance of fat and regeneration of parenchymal cells were noted in all instances. Observations on these patients support the efficacy of lipotropic therapy in the removal of fat from human fatty cirrhotic and noncirrhotic livers. This was found associated with clinical and functional improvement. No evidence was found that with the removal of fat the cirrhotic process is arrested.

Papanicolaou's Method of Cancer Diagnosis.—Wiles and Helliwig report on Papanicolaou's method practiced in more than 100 cases on the gynecologic service of a hospital and a tumor clinic in Wichita, Kan. The method has been used with an average accuracy of 80 per cent. Papanicolaou's method has a definite, but limited, usefulness wherever biopsy or curettage is not feasible. Where a suspicious lesion is accessible to biopsy or curettage the vaginal smear method is not indicated. The vaginal smear does not permit differentiation between changes due to irradiation, carcinoma in situ and invasive carcinoma. Tissue examination cannot be replaced by vaginal smears in the definite diagnosis of cancer. The high percentage of false negative smears in endometrial carcinoma counts heavily against the use of vaginal smears as a screening test in cancer detection clinics.

American J. Digestive Diseases, Fort Wayne, Ind.

15:109-134 (April) 1948

- Use of High Protein Diets in Treatment of Diabetes Mellitus. D. Adlersberg.—p. 109.
- Malnutrition and Vitamin Deficiency in Recently Released Prisoners of War. A. A. Goldbloom, A. Lieberman and C. D. Rosen.—p. 115.
- Etiologic Diagnosis of Ulcerative Colitis. W. Z. Fradkin.—p. 119.
- Treatment of Diarrhea. A. J. Cantor.—p. 120.
- Symptomatology of Chronic Amebiasis (Before and Following Treatment). R. Sandler.—p. 122.
- Biochemical Studies of Salicylic Acid and a Series of Its Derivatives. G. J. Martin and S. Byers.—p. 127.
- Epidemic Gastro-Enteritis. N. B. Jaffe.—p. 131.

American Journal of Orthopsychiatry, New York

18:191-380 (April) 1948. Partial Index

- Personality Adjustment Through Social Action. R. M. Wittenberg.—p. 207.
- The Unmarried Father. N. Reider.—p. 230.
- High School Mental Hygiene Survey. J. Hertzman.—p. 238.
- Adoptive Parents in Child Guidance Clinic. Barbara Judkins.—p. 257.
- Rorschach Intellectual Indicators in Neurotics. J. Wishner.—p. 265.
- Rorschach Study of Prejudiced Personality. Suzanne Reichard.—p. 280.
- Validation Test of Rorschach Movement Interpretations. Barbara M. Lane.—p. 292.
- Concept of the Psychopath. H. Cason.—p. 297.
- Pseudo-Psychotic Nucleus in Behavior Disorders. G. E. Gardner.—p. 309.
- Childhood Mental Disease in America: Review of Literature Before 1900. E. A. Rubinstein.—p. 314.
- Effects of Combat on Delinquent Boy. M. L. Miller.—p. 314.

Annals of Internal Medicine, Lancaster, Pa.

28:521-700 (March) 1948

- Convalescence: Study in Physiological Recovery of Nitrogen Metabolism and Liver Function. R. W. Keeton and others.—p. 521.
- Human Factors in High Performance Aircraft. B. Groeschbeck Jr.—p. 552.
- Dilution Acidosis. G. T. Shires and J. Holman.—p. 557.
- Functional Patterns in Renal Disease. A. C. Corcoran, R. D. Taylor and I. H. Page.—p. 560.
- Clinical Appraisal of Benadryl, Pyribenzamine and Anthallan in Treatment of Allergic Disorders. M. S. Kleckner.—p. 583.
- Therapeutic Use of Radioactive Elements in Malignancy. P. F. Hahn and C. W. Sheppard.—p. 598.
- Inhalation of Dust Penicillin. L. Krasno, Mary Karp and P. S. Rhoads.—p. 607.
- Spontaneous Mediastinal Emphysema and Spontaneous Pneumothorax—A Report of 20 Cases. Helen A. Dickie.—p. 618.
- Hypertensive Cerebral Swelling, a Characteristic Clinico-Pathologic Syndrome. I. M. Scheinker.—p. 630.

28:701-886 (April) 1948

- *Effects of Shock on Kidney. D. D. Van Slyke.—p. 701.
- Studies on Circulation with Aid of Tagged Erythrocytes in Case of Orthostatic Hypotension. (Asympathicotonic Hypotension). G. Nylin and M. Levander.—p. 723.
- Pain Mechanisms and Frontal Lobes: Study of Prefrontal Lobotomy for Intractable Pain. W. Freeman and J. W. Watts.—p. 747.
- *Problem of Malignant Hypertension and Its Treatment by Splenic Resection. M. M. Peet and E. M. Isberg.—p. 755.
- Pulmonary Brucellosis. W. A. Harvey.—p. 768.
- War Edema in Civilian Population of Saipan. N. B. Kurnick.—p. 782.
- Gynecomastia Following Severe Starvation. E. C. Jacobs.—p. 792.
- Amebic Liver Abscess. M. Zuckerbrod, J. Litwins, F. T. Rogliano and D. Jellinger.—p. 798.
- Studies with Medicated Aerosols: Use of Lungs as Portal for Introduction of Therapeutic Agents for Systemic Effect. S. J. Prigal.—p. 814.
- Role of Preventive Medicine in Clinical Practice. W. G. Smillie.—p. 826.
- Brucella Antibodies Following Cholera Vaccination. C. W. Eisele, N. B. McCullough and Grace A. Beal.—p. 833.

Effects of Shock on Kidney.—Van Slyke discusses shock caused by hemorrhage, burns, trauma, dehydration or other injury in which there is an inadequate volume of blood to fill the vascular bed. Prostration, cold perspiration and bloodless or cyanotic skin are the visible effects. An immediate effect of shock is a decrease in renal blood flow and function, which may lead to complete anuria. Compensatory constriction of nonrenal peripheral vessels follows, and if the loss of circulating blood volume has not been too severe, renal blood flow and function may be quickly restored. If shock is severe, the kidney is included in the peripheral constriction. Renal constriction and anuria in this phase may continue even when the arterial blood pressure is as high as 100 mm. If renal ischemia does not continue too long restoration of renal function quickly follows restoration of the general circulation. If severe renal ischemia continues for a sufficient number of hours, the second, or renal damage phase, of renal shock develops. The most obvious visible damage is located in the cells of the loop of Henle and the distal tubules. Tubular reabsorption of excretory products from glomerular filtrate appears to be the most probable cause of renal failure in this phase. If the renal damage is not too severe gradual recovery of the kidneys may occur. In fatal cases anuria or inadequate excretion persists, and death in uremia occurs in two to twenty days. To diminish the danger of death from postshock uremia it is advisable to cut the duration of shock as short as possible by quick restoration of blood volume. If acidosis is present, sodium bicarbonate should be administered. While administration of large amounts of fluid may be necessary to obtain normal blood volume and hydration, overadministration is to be avoided. Measuring blood and plasma specific gravities assists in guiding administration of

fluid. When, after recovery from acute shock, anuria or excretion of urine of low volume and specific gravity persists and blood urea continues to mount, a diet high in carbohydrates and fat and low in protein should be given to retard accumulation of catabolic products. Vividiffusion or peritoneal irrigation may retard onset of uremia and increase the opportunity for recovery of renal function.

Splanchnic Resection in Malignant Hypertension.—Peet and Isberg stress that once the diagnosis of malignant hypertension has been made arrangements should be made for treatment by splanchnic resection, because timely surgical treatment offers sure hope to the victim of this terrible malady. During the time from November 1933 to December 1941 a total of 162 cases were diagnosed as malignant hypertension and were surgically treated. Follow-up information was inadequate in 19 cases. This is a study of 143 patients followed for five to twelve years after surgical treatment. Diastolic blood pressure levels varied between 140 and 190 mm. Headache, visual disturbance and dyspnea were the most common complaints. Ninety-one per cent of the patients had organic heart disease; 84 per cent had impaired renal function and 20 per cent had experienced cerebrovascular accidents. The operative mortality in malignant hypertension was 10 per cent. The five year survival rate in the 143 cases was 21.6 per cent. All living patients receiving a fundoscopic examination five years and more after operation showed no evidence of papilledema. Four patients were maintaining blood pressure levels within normal range five to eleven years after operation. If splanchnic resection can be performed early, before heart disease has occurred, the outlook is good, for 11 of 13 such patients with malignant hypertension were living five to twelve years after operation. Once renal function becomes moderately or markedly impaired, splanchnic resection is futile.

Cincinnati Journal of Medicine

29:143-198 (March) 1948

Social Factors and Death Rates in Cincinnati. F. P. Allen.—p. 143.
Weakness of Lower Extremities as Complication of Pregnancy. H. W. Neumann.—p. 149.

29:199-256 (April) 1948

A Century and a Third of Nagotomys. J. L. DeCoursey.—p. 199.
The Pincal Body. C. K. Hoffing.—p. 210.

Georgia Medical Association Journal, Atlanta

37:67-120 (March) 1948

Röntgenologic Examination of Small Intestine. C. A. Good and M. Elizabeth H. Fletcher.—p. 67.
Incidence of Bone Tumors in Large General Hospital. L. P. Holmes, D. Robinson and S. W. Brown.—p. 74.
Roentgenographic Survey of Genito-Urinary Tract. J. J. Clark.—p. 80.
Diverticulitis of Sigmoid with Obstruction. H. H. McGee.—p. 82.
Skiodan Acacia in Hysterosalpingography. M. Mass.—p. 84.
Metastatic Cancer of Lung. R. C. Pendergrass.—p. 85.

Illinois Medical Journal, Chicago

93:121-164 (March) 1948

Diagnosis of Accessible Cancer. D. P. Slaughter.—p. 134.
Vesicovaginal Fistula. J. E. Bellas.—p. 138.
Microbiologic Assay of Antibiotics. E. E. Vicher and S. A. Levinson.—p. 143.
Prevention and Treatment of Complications of Cataract Surgery. L. Bothman.—p. 148.
Immunization Procedures. J. J. Sievers.—p. 153.
Typhus Fever in Illinois. S. A. Franzblau and H. Javid.—p. 159.
Glioma Tumors. S. Perlow and H. A. Roth.—p. 162.

Journal of Clinical Endocrinology, Springfield, Ill.

8:111-208 (Feb.) 1948

Feminizing Adrenal Tumor Causing Gynecomastia in Boy of Five Years Contrasted with Virilizing Tumor in Five-Year-Old Girl. Classification of 70 Cases of Adrenal Tumor in Children According to Their Hormonal Manifestations and Review of 11 Cases of Feminizing Adrenal Tumor in Adults. L. Wilkins.—p. 111.
Effect of Starvation on Urinary 17-Ketosteroid Excretion. R. L. Landau, Kathryn Knowlton, Dolores Anderson and others.—p. 133.
Comparison of Oral and Vaginal Epithelial Smears. D. E. Ziskin and Ruth Moulton.—p. 146.
Chemical Assay for "Cortin": Determination of Formaldehyde Liberated on Oxidation with Periodic Acid. W. H. Daughaday, H. Jaffe and R. H. Williams.—p. 166.
Hormone Secretion by Human Placenta Grown in Tissue Culture. H. L. Stewart Jr., M. E. Sano and T. L. Montgomery.—p. 175.
Endocrine Reviews. W. O. Thompson.—p. 189.
Steroid Nomenclature. H. L. Mason.—p. 190.

Journal of Infectious Diseases, Chicago

82:101-196 (March-April) 1948. Partial Index

Interrelationships of Blood Cells of Cattle in Health and Following an Induced Infection with *Brucella abortus*. L. C. Ferguson, M. R. Irwin and B. A. Beach.—p. 101.
Studies on Hemoflagellates: IV. Observations Concerning Some Biochemical Activities in Culture, and Respiration of Three Species of Leishmanias and *Trypanosoma cruzi*. S. Lu Chang.—p. 109.
Thiourea and Inhibition of Growth of Fungi. T. S. Danowski and M. Tager.—p. 119.
Effect of Cysteine on Antitrypanosome Activity of Antimonials. G. Chen and E. M. K. Geiling.—p. 131.
Effect of Methyl-Diis (Beta-Chloroethyl) Amine on *Trypanosoma equiperdum*. G. Chen.—p. 133.
*Studies of Distribution of Poliomyelitis Virus: IV. In Rural Schools Following an Epidemic. T. Francis Jr. and G. C. Brown.—p. 163.
Nasal Transmission of Pleuropneumonia-Like Organisms in Mice and Rats. J. B. Nelson.—p. 169.
Effect of Thiamine Deficiency on Western Equine Encephalomyelitis in Mice. E. B. Kearney, W. L. Pond, B. A. Plass, K. H. Maddy and others.—p. 177.

Distribution of Poliomyelitis Virus After Epidemic.

Francis and Brown say that in the summer and fall of 1945 Tennessee experienced an epidemic of poliomyelitis which involved principally rural areas. Since the date set for the opening of schools followed shortly on a heavy incidence of poliomyelitis, an opportunity was presented to obtain information relative to the presence of infection in the pupils arriving from the farms on opening day and to study the possible spread of virus, as measured by its detection in the stools of children in the school. Two rural schools, with 48 and 51 pupils respectively, were selected for study. In one school none of the pupils had detectable virus in his intestinal tract at the time of the first collection, but virus was isolated from 1 person two weeks later. It appears probable that this person had acquired the infection outside the school, as all pupils were free from the virus at the time of the original collection; in this instance there was a history of earlier association with a paralytic case of poliomyelitis. In another school, 2 children were carrying virus on the opening day but only 1 of these still carried it two weeks later, and no other children in the school acquired the infection. Thus the study yielded no evidence of significant dissemination of virus in the groups. The results indicate again the relative differences in efficiency between close familial association and the less intimate nonfamilial contact in the transmission of poliomyelitis virus.

Journal-Lancet, Minneapolis

68:117-168 (April) 1948

Surgical Sterilization in Women. A Ten Year Study. C. B. Darner.—p. 118.
Recent Therapy in Treatment of Acne. E. Grinnell.—p. 121.
Veterans Medical Care. W. A. Wright.—p. 124.
Chronic Myocarditis of Unknown Etiology: Report of Case. A. E. Moe and J. D. LeMar.—p. 127.
Mercurial Diuretics. R. O. Goehl.—p. 131.
Status of North Dakota's Plasma Program. M. E. Koons.—p. 136.

Journal of Nutrition, Philadelphia

35:399-522 (April) 1948. Partial Index

Determination of Minimum Vitamin Requirements for Growth. D. M. Hegsted.—p. 399.
False High Values for Ascorbic Acid in Guava Juice: Note on Use of Colorimetric Method with 2,4-Dinitrophenylhydrazine. Eva Hartzler.—p. 419.
Absorption of Iron from Beef by Women. Frances A. Johnston, Ruth Frenchman and Euphemia D. Boroughs.—p. 453.
Effect of Inanition on Mammary-Gland Development and Lactation. J. F. Sykes, T. R. Wrenn and S. R. Hall.—p. 467.
Physiologic Availability of Pantothenyl Alcohol. S. H. Rubin, J. M. Cooperman, M. E. Moore and J. Scheiner.—p. 499.
Energy Expenditure for Quiet Play and Cycling of Boys Seven to Fourteen Years of Age. Clara M. Taylor, Mina W. Lamb, Mary E. Robertson and Grace MacLeod.—p. 511.

Nebraska State Medical Journal, Lincoln

33:77-112 (March) 1948

Statesmanship in Medicine. E. L. Bortz.—p. 79.
Prostatic Disease: with Special Reference to Early Diagnosis and Treatment of Carcinoma of Prostate. R. B. Henline.—p. 84.
Evaluation of Present Day Treatment of Cirrhosis of Liver. C. Frandsen.—p. 89.
Case-Finding Value of Miniature X-Rays of Chest. M. Fleishman.—p. 92.
Infantile Toxoplasmic Encephalitis: Case Report with Unusual Anamnestic Features. F. H. Tanner, P. M. Bancroft and H. E. Harvey.—p. 96.

New England Journal of Medicine, Boston

238:493-544 (April 8) 1948

*Roentgenographic Studies of Gastrointestinal Tract Following Section of Vagus Nerves for Peptic Ulcer. M. Ritvo and I. A. Shauffer.—p. 496.
Multiple Localized Pleural Effusions as Manifestation of Congestive Heart Failure: Report of a Case. M. DiMaio.—p. 502.
Ineffectiveness of Aluminum Subacetate in Rheumatoid Arthritis. A. Blazer, H. H. Friedman and O. Steinhilber.—p. 507.
Role of Pleuropneumonia-Like Organism in Genitourinary and Joint Disease. L. Dienes, M. W. Ropes, W. E. Smith, Sarabelle Madoff and Others.—p. 509.
Endobronchial Metastasis of Renal Cell Adenocarcinoma.—p. 533.
Carcinoma of Tail of Pancreas, with Invasion of Spleen, Left Adrenal Gland and Posterior Wall of Stomach and Metastases to Liver and Lungs.—p. 535.

Roentgenography of Gastrointestinal Tract Following Resection of Vagus.—Ritvo and Shauffer made roentgenographic studies on 29 patients with transthoracic section of the vagus nerve and 4 with transabdominal resection of the vagus nerve. In the early postoperative stages there was definite gastric dilatation and atonicity in most cases. Sluggish, ineffective and arrhythmic peristalsis or absent peristalsis was associated with dilatation and atonicity. Emptying times, both initial and final, were increased. These changes occurred to a lesser degree in patients with previous gastroenterostomies and in those with partial gastrectomies. Two patients had gastroenterostomies after vagotomy for dilatation and retention. Follow-up studies showed a return toward the normal from these changes within six months to a year. Complete return to normal in all respects was not found in any case. The ulcers healed promptly after operation. This was especially striking in the cases of stomal and jejunal ulcers in the patients with partial gastrectomy. The postoperative size of the small bowel was not remarkable in any case; the motility was slow, apparently owing to the delay in emptying of the stomach. In 1 patient temporary dysphagia developed after transabdominal resection of the vagus nerve.

New York State Journal of Medicine, New York

48:563-672 (March 15) 1948

Management of Gastric Hemorrhage. A. F. R. Andresen.—p. 603.
Primary Resection for Cancer of Lower Bowel. H. E. Bacon and R. J. Rowe.—p. 607.
Differential Diagnosis of Abdominal Tumors by Roentgen Method. S. Brown.—p. 609.
*Clinical Experience with Nitrogen Mustard. W. W. Faloan and L. W. Gorham.—p. 612.
Plastic Surgery in New York State. E. B. Hague.—p. 617.
Nerve Block Therapy for Pain of Laryngeal Tuberculosis. E. M. Papper and E. A. Rovenstine.—p. 622.
Intractable Edema: Clinical Therapeutic Implications. L. Leiter.—p. 624.
*Ringworm of Scalp in New York. R. M. Montgomery, J. A. Haimlein and Frances E. Karpluk.—p. 629.

Clinical Experience with Nitrogen Mustard.—Faloan and Gorham report on the use of methyl-bis (beta-chlorethyl) amine hydrochloride in 15 patients. All patients except 1 received intravenous injections on four consecutive days of 0.1 mg. of methyl-bis (beta-chloroethyl) amine hydrochloride per kilogram of body weight. The injection was made intravenously through the tubing of rapidly flowing isotonic solution of sodium chloride. The procedure is carried out within five minutes after dissolving the nitrogen mustard. All patients were followed with complete blood counts at least twice weekly for the three weeks following injection. The use of nitrogen mustards in Hodgkin's disease, polycythemia vera and lymphosarcoma will frequently induce temporary remissions. Experience, confirming that of other workers, does not allow a similar view of the leukemias treated with this substance. The toxic effects of the drugs make them potentially dangerous, and they must be used with care, both in handling and in the follow-up of their effects on the hematologic picture.

Ringworm of Scalp.—Montgomery says that from 1940 to 1947, inclusive, 2,857 cases of tinea capitis have been studied at the New York Skin and Cancer Unit. Of these, 83.3 per cent were caused by *Microsporon audouini*. There has been a sharp increase in ringworm of the scalp since 1943, and a substantial relative increase of infection with *M. audouini*. Three cases of infection with *Trichophyton crateriforme*, 4 cases of infection of the scalp with *Trichophyton sulfureum* and 4 cases of infection of the eyelashes with *M. audouini* are reported.

Surgery, St. Louis

23:603-734 (April) 1948

Changing Status of Surgical Care. I. S. Ravdin.—p. 603.
Pathogenesis of Diastolic Hypertension. P. Heinbecker.—p. 618.
*Indications for Sympathectomy in Treatment of Hypertension. T. Findley.—p. 639.
Gunshot Wounds Involving Abdominal Aorta. Report of 2 Cases. C. E. Holzer Jr.—p. 645.
War Wounds of Rectum and Anal Sphincter. W. S. McCune.—p. 653.
Cannula for Pancreatic Fistula: Device for Permitting Complete Periodic Experimental Collection of Pancreatic Juice. I. D. Baronofsky.—p. 665.
Verrucous Carcinoma of Oral Cavity. J. V. Ackerman.—p. 670.
Hip Nail Counterbore. G. J. Curry.—p. 679.

Sympathectomy in Hypertension.—Findley maintains that sympathectomy for hypertension has not been placed on a rational basis. The one known basic fact is that elevation of blood pressure is due to increased peripheral resistance, but there is as yet no agreement as to whether the arteriolar constriction is of humoral or nervous origin. Constitution, arteriosclerosis, renal function, nervous system, endocrine organs and pregnancy are some of the factors that may exert vasoconstrictor influences. Any enlargement of the vascular bed which follows sympathectomy is probably temporary. In the author's experience with about 100 hypertensive patients who have been subjected to a bilateral splanchnicectomy and excision of both sympathetic chains from the fourth or fifth thoracic through the second lumbar ganglions, nothing resembling a "cure" was ever seen. Invariably, the blood pressure slowly rises after the operation to or somewhat below the preoperative level. Patients should not be selected for operation solely on the basis of tests which measure only fluctuations in blood pressure. Procedures such as the cold pressor test, the "amylal" sedation test, splanchnic block and the induction of high spinal anesthesia have proved notoriously unreliable. The operation should be reserved for patients with severe symptoms but no gross impairment of cerebral, cardiac or renal function. The operation should not be done on young persons with mild asymptomatic hypertension. Sympathectomy may profitably be done on patients over 50 years of age, provided that other requirements are met. Patients should be told that sympathectomy offers palliation and not cure.

Tennessee State Medical Assn. Journal, Nashville

41:77-114 (March) 1948

Memorial Address. C. R. Henry.—p. 77.
Important Factors in Diagnosis of Favorable Brain Tumors. N. Gotten and C. D. Hawkes.—p. 80.
Public Health Aspects of Medicine in Oak Ridge. C. H. Benning.—p. 87.

Union Médicale du Canada, Montreal

77:391-514 (April) 1948

*Rheumatic Fever: Para-Aminobenzoic Acid. M. Belisle.—p. 392.
Puncture Biopsy of Liver, Method and Results. P. Cazal.—p. 426.
Shwartzman Phenomenon. Anne-Marie Masson.—p. 433.
Early Diagnosis of Cancer of Stomach. A. F. Vallée.—p. 440.
Sedimentation Test: Diagnosis and Prognosis. J. Pesant.—p. 448.

Para-Aminobenzoic Acid in Rheumatic Fever.—Belisle treated 3 patients, 2 men aged 30 and 54 respectively and a woman aged 21, who had rheumatic fever with sodium salicylate combined with para-aminobenzoic acid. Twenty-four grams of para-aminobenzoic acid was given by mouth daily in fractional doses of 2 Gm. every two hours. By this combined treatment the initial level of the sodium salicylate in the blood was increased two to five times. Thus a therapeutic concentration of the salicylate in the blood recommended by majority of the authors—i. e., 35 mg. per hundred cubic centimeters—was obtained, and in some instances with relatively small doses of sodium salicylate. There was a drop in the salicylate level in the blood of these patients when the administration of para-aminobenzoic acid was discontinued. The para-aminobenzoic acid will have its place in the therapeutic armamentarium for rheumatic fever, particularly in those instances in which an optimum therapeutic concentration cannot be obtained by administration of the sodium salicylate alone. The clinical employment of the para-aminobenzoic acid may be limited by its obligatory administration every two hours.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

35:225-336 (Jan.) 1948

- *Surgery of Lumbar Intervertebral Disk Protrusion: Study of Principles and Results Based on 100 Consecutive Cases Submitted to Operation. M. A. Falconer, M. McGeorge and A. C. Berg. —p. 225.
- Surgical Treatment of Carcinoma of Hypopharynx and Esophagus. H. Wooley. —p. 249.
- Gram Negative Meningitis Following Head Wounds with Especial Reference to Infection with Coliform Bacteria. W. Lewin. —p. 266.
- Review of Surgical Methods in Treatment of Essential Hypertension. A. L. McGregor. —p. 281.
- Persistent Priapism. H. Bailey. —p. 298.
- *Posterior Gastroenterostomy for Organic Pyloric Stenosis: Review of End Results of 80 Cases. H. Reid and R. Marcus. —p. 304.
- Mesenteric Cysts. M. Paul. —p. 308.
- Intraoperative Hemorrhage of Unusual Etiology with Report of 2 Cases. M. F. A. Woodruff. —p. 311.
- Peritoneal Loose Bodies. J. A. Ross and A. McQueen. —p. 313.
- Strangulated Ovarian Hernia. A. M. Desmond and I. Hunter. —p. 318.

Surgery of Intervertebral Disk Protrusion.—Falconer and his associates are concerned with factors which make for success or failure in intervertebral disk surgery, particularly as applied to the lumbar region. The study is based on an analysis of the clinical, operative and follow-up observations in 100 consecutive patients subjected to operation with their condition diagnosed as prolapsed lumbar intervertebral disk. A careful selection of cases is the most essential. All patients suffering from severe sciatica and/or pain low in the back should be treated first by rest in bed or immobilization for at least one month. Patients whose sciatica is not relieved appreciably by rest in bed should then be carefully investigated. A few will prove to have lesions like cauda equina tumor or granulomatous or neoplastic disease of the spine, but most will have disk lesions and should have surgical operation. The affected intervertebral disk must be exposed adequately. If this should prove difficult to achieve by an interlaminar approach, a laminectomy should be performed, for a poor exposure prevents the surgeon from curetting thoroughly the interior of the disk. Provided the interarticular joints are left intact, a laminectomy does not permanently weaken the spine. Disk prolapses may be divided into four groups, projections, extrusions, intermittent prolapses and scarred disks. Intermittent prolapses in particular, are a group which are apt to be overlooked at operation, and it is probable that many of the negative explorations occurred in cases involving this type of lesion. In order to avoid persistence or recurrence of symptoms, it is essential to remove all loose and readily detachable tissue from within the pathologic disk. In many instances this necessitates exposure and curettage of the pathologic disk from both sides of the theca. During convalescence the patient should undergo graduated exercises and physical training designed to strengthen weakened erector spinae muscles and to promote general physical fitness. This hastens the return to work. Spinal fusion is seldom warranted. If, after operation for disk prolapse, symptoms persist or recur, reexploration should be considered. Continued symptoms have often been due to an inadequate removal of the diseased disk.

Posterior Gastroenterostomy for Pyloric Stenosis.—Reid and Marcus review the results of gastroenterostomy in 80 cases of pyloric stenosis. The operations were performed by different surgeons at the Liverpool Royal Infirmary between 1928 and 1938. Organic pyloric stenosis commonly is the result of a long standing duodenal ulcer which in the process of healing occludes the pylorus, with resulting gastric hypertrophy and dilatation. The scarring may be so great that the pylorus only admits a bristle. The patient is subjected to slow starvation and dehydration. Copious vomiting occurs in the majority of cases. In all cases under review patients were treated by a posterior no-loop vertical isoperistaltic gastroenterostomy with a large stoma. The average age of the patients at the time of operation was 50 years. Two of the patients died as the result of the operation and 15 others could not be traced for follow-up. Of the 63 who could be traced, 9 died within ten years; the

other 54 were alive over ten years after the operation. The general impression is gained that gastroenterostomy is definitely worth while. Most of these patients expressed their gratitude for the operation and believed that it had benefited them. The average period of convalescence after operation is four weeks. In partial gastrectomy it is much longer. The diet was a normal mixed diet. Anemia and vitamin deficiency did not occur. There was no evidence of the so-called dumping syndrome, which occurs in a considerable percentage of the patients after subtotal gastrectomy. The authors believe that with modern anesthesia, chemotherapy, and adequate preoperative and postoperative measures, the operative mortality should not be more than 1 per cent.

Lancet, London

1:441-468 (March 20) 1948

- The Full-Time Specialist. F. A. Jones. —p. 433.
- Assessment of Intestinal Carminatives. S. Alstead and J. F. Patterson. —p. 437.
- Actinomycosis of Liver with Recovery. L. M. Shorvon. —p. 439.
- *Results of Sympathectomy of Upper Limb with Special Reference to Raynaud's Disease. H. Barcroft and G. T. C. Hamilton. —p. 441.
- Electronarcosis: Its Value and Its Dangers. G. Garmany and D. F. Early. —p. 444.
- *Fructose and Fructolysis in Semen in Relation to Fertility. T. Mann. —p. 446.

Sympathectomy of Upper Limb.—The fifty-six limbs studied by Barcroft and Hamilton were those of persons who had undergone sympathectomy for Raynaud's disease, Raynaud's phenomenon, thromboangiitis obliterans, causalgia and trophic ulcer. The interval between operations and investigation varied from a month to six years. All the sympathectomies were preganglionic sections. Examinations of seventeen upper limbs from one to six months after sympathectomy, in the form of a preganglionic section, revealed no recurrence of attacks in fourteen of sixteen hands operated on for Raynaud's phenomenon; in two hands the attacks were less frequent and less severe. Vasomotor and sudomotor reflexes were absent. This indicates that preganglionic section completely sympathectomizes the limb; there is no outflow to the hand above the second thoracic anterior spinal nerve root. Examination of the other thirty-nine upper limbs from one to six years after preganglionic section showed considerable clinical improvement. There was no recurrence of vasospastic attacks in eighteen of thirty-six limbs operated on for Raynaud's phenomenon. In fourteen hands the attacks were less distressing; only 4 patients had obtained no benefit. Vasomotor and sudomotor reflexes, though absent in some limbs, were present in many. It follows that a nervous connection between the brain and the vessels and sweat glands of the hands is often reestablished. The persistence of the excellent clinical results, in spite of the reestablishment of a vasomotor path, probably signifies that the new path is functionally inferior to the original. Partial regeneration is the most likely explanation of the new nerve path.

Fructose and Fructolysis in Semen.—Mann asserts that the survival of spermatozoa within ejaculated semen depends largely on the supply of nutrient material in the seminal plasma. The nutrient substance present in the seminal plasma is a reducing and glycolyzable carbohydrate. The nature of the glycolyzable carbohydrate remained unknown until recently, when chemical investigations have shown that the seminal sugar is d-fructose. The survival of spermatozoa in ejaculated semen depends largely on the amount of fructose in the seminal plasma. The formation and secretion of fructose in the male accessory sex glands is controlled by testicular hormone. The amount of fructose present in semen can be measured colorimetrically. A method of doing this is described. A low fructose level in the semen suggests either hormonal or spermatozoal deficiency; but a high semen-fructose level does not necessarily indicate spermatozoal efficiency. The level is normally subject to fluctuation. Fructose disappears from semen incubated in vitro; the rate of fructolysis indicates the amount of spermatozoal metabolic activity. Fructolysis plays an essential part in the survival of stored spermatozoa, as used in artificial insemination.

Acta Medica Scandinavica, Stockholm129:509-616 (Feb. 25) 1948. **Partial Index**

Epidemic of Acute Glomerulonephritis in Amsterdam. P. Formijne.—p. 509.

Addis-Shevky Concentration Test. J. Øster.—p. 513.

*Autotransplantation of Joint Capsule, an Attempt to Desensitize Patients Suffering from Rheumatoid Arthritis. H. Novotny.—p. 524.

*Thrombocythemia Hemorrhagica. O. Mortensen.—p. 547.

Development of Putrid Pulmonary Abscess in Emphysema Bladders in Primary Atypical Pneumonia. M. C. Ehrstrom.—p. 573.

Autotransplantation of Joint Capsule in Rheumatoid Arthritis.—Novotny observed that when patients with rheumatoid arthritis undergo certain operations, they often show signs of possible desensitization. On the presumption that the course of the disease is connected with allergic phenomena, he has tried to produce a state of desensitization by means of a transplantation of the diseased tissue of the capsule, preferably from the patient's knee joint, subcutaneously to the lower umbilical region. In 11 of the 12 cases described, a favorable postoperative reaction appeared, with reduction of pain and swelling and an increase of the mobility of the joints. In 1 case there was not a reaction, and in this case the transplanted tissue became necrotic. Of the 11 patients, 7 have remained in a better condition after operation. The period of observation has been nine months in 1 case and twelve to seventeen months in 6 cases. Two patients had a complete and 2 a partial relapse in the course of a year.

Hemorrhagic Thrombocytosis.—Mortensen reports the case of a man, aged 64, who had had symptoms of polycythemia vera which had later been followed by a leukemia-like condition. There was a hemorrhagic tendency, while the thrombocyte count was 6,000,000. Coagulation time and prothrombin time were normal. There was marked neutrophilic leukocytosis with eosinophilia. There were signs of gastroenteritis as in a number of the cases earlier described. The syndrome is regarded as a malignant hyperfunction of the bone marrow of the same type as myeloid leukemia and polycythemia vera.

Brasil-Medico Rio de Janeiro62:9-50 (Feb. 7 and 14) 1948. **Partial Index**

*Carcinoma of Gallbladder. J. de Brito.—p. 9.

Carcinoma of Gallbladder.—Carcinoma of the gallbladder is rare. The cirrhotic type is the most frequent. The early symptoms are those of lithiasis. As the disease progresses the tumor becomes palpable, hard and painful. Pain radiates to the ribs of the right side and to the right lung. The late stage is characterized by aggravation of the digestive disorders, anorexia, acute anemia, jaundice, symptoms due to metastases and progressive cachexia. The diagnosis is difficult. The therapy is one of prevention, consisting of a cholecystectomy as soon as the diagnosis of gallstone disease is made. The prognosis is unfavorable.

Klinische Wochenschrift, Heidelberg26:1-32 (Jan. 1) 1948. **Partial Index**

*Circulatory Dynamics and Sympathetic Tonus in Human Beings with Arteriovenous Fistulas. O. Gauer and F. Linder.—p. 1.

*Genesis of Megaloblastic Blood Formation. U. Haenel.—p. 8.

*Regulation of Plasma Protein Bodies: III. Plasma Protein Bodies and Quantities in Ascites Punctates. M. Gulzow.—p. 12.

Encephalogram After Typhus. F. Schmieder.—p. 14.

Circulatory Dynamics and Sympathetic Tonus in Presence of Arteriovenous Fistulas.—Gauer and Linder say that observations during the first world war demonstrated that arteriovenous aneurysms resulting from gunshot injuries of peripheral vessels not only produce circulatory disturbances locally, in the involved part of the body, but also exert an effect on the heart and on the general circulation. Nearly 400 aneurysms were observed during the second world war at the clinic in Heidelberg and 150 arteriovenous fistulas were operated on. During the first year after the war 16 patients with arteriovenous fistulas were studied. Depending on the size of the communicating opening in an arteriovenous opening, the peripheral circulatory resistance is reduced by about 40 per cent or more. In order to maintain an adequate blood pressure, the minute volume of the heart is correspondingly increased. This chronic increase in the performance of the heart leads to cardiac dilatation and insufficiency. Permanently increased performance

of the circulation is accompanied by an increase in venous tonus and changes in the muscle structure of the heart, which is manifested in a dilatation of the cardiac cavities. If the fistula is closed, many hours are required until equilibrium is restored. The circulatory changes caused by the arteriovenous fistula are capable of regression. Early surgical removal of the circulatory short circuit is advisable.

Genesis of Megaloblastic Blood Formation.—Haenel presents observations on bone marrow punctates of patients with pernicious anemia. He concludes that megaloblasts derive from undifferentiated reticulated cells. Megaloblastic blood formation is mesenchymal in contradistinction to normal parenchymatous erythropoiesis. A second factor must be assumed for the development of megaloblasts. This factor is the loss of the heteroplastic divisibility of the cell which is regarded as the morphogenetic manifestation of the lack of the antipernicious anemia principle. The peculiarity of the megaloblastic structure of the nucleus is interpreted as the persistence of mesenchymal characteristics of the nucleus.

Semaine des Hôpitaux de Paris

23:1749-1790 (July 28) 1947

*Study in Phenylpyruvic Oligophrenia. J. Delay.—p. 1749.

*Phenylpyruvic Oligophrenia. J. Delay, P. Pichot, M. Polonovski and others.—p. 1749.

*Encephalography with Gas in Oligophrenia. J. Delay, P. Desclaux and P. Pichot.—p. 1758.

Congenital Ectodermal Defects and Oligophrenia. A. Touraine.—p. 1767.

Psychologic Aspects of Oligophrenia. P. Pichot.—p. 1771.

Phenylpyruvic Oligophrenia.—Delay points out that in the group of oligophrenias a distinction should be made between those which depend on exogenic and those which depend on endogenic and genetic causes. The author designates the first as oligophrenites and the second as oligophrenoses. The former are the results of exogenic factors such as trauma and toxic infection, the latter represent degenerative disease. Certain oligophrenoses of recessive monomeric heredity with metabolic disturbances are of special interest from the point of view of general pathology, for instance, amaurotic idiocy of Tay-Sachs, which is accompanied by disturbances in the lipid metabolism, and phenylpyruvic oligophrenia, which is accompanied by metabolic disturbances of proteins and more especially of amino acids.

Phenylpyruvic Oligophrenia.—Delay, Polonovski and other investigators review the clinical genetic and biologic aspects of phenylpyruvic oligophrenia. They give particular attention to reports by Fölling of Norway, who was first to call attention to the presence of phenylpyruvic acid in the urine of patients with oligophrenia and also suggested the probable genetic nature of this disorder. The authors consider, in addition to Fölling's contributions, those of several other observers and cite a case of their own. The new fact they stress is a considerable disturbance detectable in tests of hepatic function. Phenylpyruvic oligophrenia possibly represents the key to a large number of problems in psychiatry, neurology, genetics and biochemistry. The first results obtained in studies on this problem, although they give no definite solution, open an almost unlimited field for new investigations on pathogenic mechanisms that may throw new light on familial disorders of the nervous system and on the relation between biochemical disturbances of genetic origin and psychiatric disturbances; they give an explanation for a process which has been spoken of as degeneration or abirotrophy.

Encephalography in Oligophrenia.—Delay and his co-workers describe the technic used by them and experiences with this method in 70 patients with oligophrenia. The method represents practically an anatomic examination on the living. Certain diagnoses can be verified only by this method, for instance, cases of agenesis of the corpus callosum or the syndrome of Little with median ventricle. Encephalography facilitates differentiation of a syndrome like microcephalia and its different forms. It is also a valuable aid in prognosis. Although the information obtained so far is still fragmentary, the first results are encouraging and suggest that the solution of these problems is found only by comparison of numerous, encephalographic records with information obtained by clinical, genetic, psychologic and biologic studies on patients with oligophrenia.

Book Notices

The Care of Chronic Disease in Pittsburgh and Allegheny County. A Survey. By Claude W. Munger, M.D., and Mary C. Jarrett. Under the Auspices of Federation of Social Agencies of Pittsburgh and Allegheny County Health Division. Loose-Leaf. Paper. Various pagination. Health Division, Federation of Social Agencies, 519 Smithfield St., Pittsburgh, 1917.

A comprehensive and detailed study of the needs of patients suffering from chronic diseases is embodied in the survey prepared for Pittsburgh and Allegheny County. In 1900 persons over 65 years of age constituted 4.1 per cent of the population of the United States, and, in 1940, 6.8 per cent; reliable estimates indicate that by 1960 they will comprise over 9 per cent of the population.

Other studies indicate that 10 per cent of the general population suffer from chronic disease, of whom 1 per cent are incapacitated invalids. Something of the magnitude of the problem is expressed in these figures, and the facilities for the care of such patients have been scant and inadequate. Too frequently it has been the tendency to approach the problem as though it were medically isolated, and patients are given the barest necessities to sustain life. Present sentence in a modern penal institution is frequently far less harsh than life in an institute for the chronically ill, where patients sit in long rows beside their beds or on hard benches in corridors or congregate in crowded basement flooded with the raucous noise from a radio loud speaker. Almost no attempt is made to provide diversional or recreational facilities, and patients of different social and ethnic background, of varied life experiences, are all herded together in the belief that similarity in years is synonymous with unanimity of purpose and outlook in life.

Dr. Munger and Miss Jarrett have offered some excellent suggestions to alleviate the plight of the chronically ill. Voluntary homes for the chronically ill should be expanded in numbers and their facilities increased by the addition of regular medical service given by competent physicians, satisfactory dietary facilities, the services of medical social workers and the development of suitable recreational programs. Many of the techniques long used in hospitals for acutely ill patients should be translated for use in homes for the chronically ill. Nursing homes can become another valuable means of meeting the problem of the chronically ill. A system whereby there is a division of the chronically ill and those requiring hospital services and those requiring home services is essential in the provision of competent medical service. A plan whereby hospitals would be located on or near the campus of the medical schools would attract a better class of physicians and would allow the possibility of using these patients for teaching purposes by the medical school. Resident and undergraduate instruction could also be used if the medical college were asked to nominate the staff physicians.

Boarding as well as apartment houses could be adapted to the use of old age assistance pensioners and would also help meet some of the problems of the chronically ill.

The erection of satisfactory community homes for the chronically ill is of vital concern and requires careful planning by leaders of the medical and social fields. Arrangements by which patients are allowed to pay for their services in accordance with their available resources might well be incorporated in such a plan. Community planning on a large scale would not be as expensive a program as would appear at first sight, since through neglect there are serious loss of earning power, family disintegration and individual suffering not usually recognized. In terms of over-all community gain, it would be cheaper to plan, build and maintain satisfactory facilities for the chronically ill, and rehabilitate a sufficient number of them to make the plan remunerative to a certain degree.

The authors are to be commended on their courage in offering a sound, sensible plan for a seriously neglected phase of medical care. The book is recommended to all physicians and social workers, who must inevitably face the problems of the chronically ill and the aged. It is regretted that the book is mimeographed and that not all pages are easily readable. Another slight defect of the book is that the pagination is by

chapters rather than continuous; also, the lack of an index makes an otherwise excellent book a little difficult as a reference book. In spite of these small blemishes it is an outstanding report on a serious current problem.

Disability Evaluation: Principles of Treatment of Compensable Injuries. By Earl D. McBride, B.S., M.D., F.A.C.S., Assistant Professor in Orthopedic Surgery, University of Oklahoma School of Medicine, Oklahoma City. Fourth edition. Fairbaird. Price, \$12. Pp. 667, with over 400 illustrations. J. B. Lippincott Co., E. Washington Sq. Philadelphia 5, 1918.

This book is made up of numerous detailed tables, accompanied and elaborated by informative reading matter regarding the injuries of industrial occupations. These injuries are discussed from various points of view: subjective and objective symptoms, physical signs, methods of examination, differential diagnoses, treatments and prognoses. But these all lead up to the discussions on the evaluation of disabilities resulting from injuries.

The tables and formulas, which are the core of the work, are extensive and are arranged to give practically foolproof answers—providing that the reader knows how to solve them. A large proportion of readers will find them difficult to use because they are complicated.

In the text as well as in the tables and formulas there is lack of clearness and simplicity of style. There is much valuable and dependable information throughout the book in regard to the workmen's compensation laws as they are enacted in the various states, and this without formidable legal phraseology. The sections on malingering, the tables showing the healing periods required for fractures, and the chapter on "The Industrial Back"—not an apt title—are among the best. An important omission from discussion is Sudek's atrophy (causalgia).

This volume is a somewhat sloppy job of bookmaking, as shown by the haphazard page numbering, obvious errors and inadequate index.

Factors Regulating Blood Pressure. Transactions of the First Conference, April 24-25, 1917, New York, N. Y. Edited by B. W. Zweifach and Ephraim Shorr. Loose-Leaf. Paper. Price, \$1.90. Pp. 175, with 10 illustrations. Josiah Macy, Jr. Foundation, 365 Park Ave., New York 21, [n. d.].

This volume reports the transactions of the First Conference on Factors Regulating Blood Pressure, held under the auspices of the Josiah Macy Jr. Foundation in April 1917. The Macy Foundation and its director, Dr. Frank Fremont-Smith, have done much in recent years to advance biologic and medical science through the sponsoring of meetings of small, informal conference groups of laboratory and clinical investigators in several fields, including that of blood pressure. The first meeting of the conference (presided over by Dr. Harry Goldblatt) was concerned mainly with experimental and human hypertension, but future meetings will include consideration of cardiovascular mechanisms in health and in diseases other than hypertension, as well as renal function and malfunction.

Inclusion of the thirteen formal presentations of the two day conference and the discussion following each renders this volume an excellent summary of the current views of leading American and Canadian investigators in the field of hypertension. The pathogenesis and treatment of experimental hypertension were considered under the following headings: (a) the role of the nervous system in experimental renal hypertension; (b) the concept that experimental renal hypertension is due to renalcretory deficiency; (c) hepatorenal vasotropic factors in experimental renal hypertension; (d) salt choice by renal hypertensive animals; (e) methods of producing and studying experimental hypertension; (f) renin tachyphylaxis and (g) the effect of renal extracts and antirenin in experimental renal hypertension. Human hypertension was discussed as follows: (a) humoral factors in renal blood flow, (b) treatment with low salt and low protein diets, and (c) treatment with renal extracts, tyrosinase and quinones.

The evidence reported at the conference suggests that the pathogenesis of a presently unknown percentage of cases of essential hypertension is on a renal basis and that the renal mechanism involved is not yet determined but may be an increased secretion of renin, an increased formation of pressor amines or a decreased secretion of a hypothetic renal hormone.

Para-aminohippurate clearance and extraction studies gave no support to the possibility that renal arteriovenous shunts are operative and important in the kidney of essential hypertension. Discouraging results with the treatment in essential hypertension by the rice diet and by sympathectomy, quinones and renal extracts were reported. Nevertheless, the conference demonstrated that slow but steady progress is being achieved in the study of hypertension. These transactions should be read by all investigators in the fields of experimental and clinical hypertension and by those physicians who appreciate a moving account of sometimes brilliant and more often painstaking elucidation of the fundamental mechanisms of hypertension and cardiovascular and renal pathophysiology.

The Integrative Action of the Nervous System. By Sir Charles Sherrington, O.M. With a new foreword by the author and a bibliography of his writings. New 1947 edition. Cloth. Price, \$6. Pp. 433, with 85 illustrations. Yale University Press, New Haven 7, Connecticut; Cambridge University Press, Bentley House, 200 Euston Rd., London, N. W. 1, [n. d.]

This reprinting of one of the outstanding classics of all physiologic literature is most welcome. This monograph first appeared in 1906 as the expanded presentation of a series of lectures given at Yale University as the Mrs. Hepsa Ely Silliman Memorial Lectures in 1904. It was subsequently reprinted in 1911, 1914, 1916, 1918 and 1920. In the more than a quarter of a century which has elapsed since the last reprinting it has often been difficult to obtain. This has been unfortunate, for although it will soon be a half century since these lectures were given and longer since some of the experimental work on which they were based was performed, the book maintains a remarkable vitality for all modern students of the nervous system. No single person has had greater influence on the development of neurologic science and neurologic thought than has Sir Charles Sherrington. This book contains much of his original observations and the theses based thereon.

The Physiological Society (of Great Britain) is to be congratulated on having made this work again available. It is particularly fitting that it was issued as a gift volume in connection with the Seventeenth International Physiological Congress of 1947, which met in Oxford, England.

This volume contains, in addition to the original text, an editorial note by the noted English physiologist Dr. Samson Wright, who has been directly responsible for the issuance of this reprinting, and a new foreword by Sir Charles, as well as his *curriculum vitae*.

The Rotunda Hospital 1745-1945. By O'Donel T. D. Browne, M.B., M.A., M.A.O., King's Professor of Midwifery, Trinity College, Dublin. Cloth. Price, \$11. Pp. 286, with 45 illustrations. Williams & Wilkins Co., Mount Royal & Guilford Aves., Baltimore 2, 1947.

The history of the Rotunda Hospital, covering a period of two hundred years, represents a panorama of the development of modern obstetrics. The hospital was founded on March 15, 1745 by Bartholomew Mosse as the Dublin Lying-in Hospital for Poor Women in George's Lane. Mosse's primary objectives for the hospital were to help the poor lying-in women of Ireland and to provide a teaching center in midwifery for doctors, midwives and nurses. These purposes were fulfilled admirably during its long lifetime.

The story of the Rotunda is unfolded in a series of chapters devoted to the work of each of the masters of the hospital. Many of them made important contributions to the hospital and to the development of obstetrics. These great masters helped to shape the course of the specialty. In a summary of the outstanding masters, Mosse, the founder, was a man of vision and dauntless energy who saw the fruition of a great idea. Ould, who followed Mosse, wrote a book in 1741. He made pertinent observations on labor in women with contracted pelvis and on the third stage of labor. Clarke instituted measures for the ventilation of the wards of the hospital. He was the first to realize that there was danger of infection in placing two puerperal women in the same bed. These simple measures decreased the number of fatalities from puerperal sepsis. Labatt and Collins continued the interest in puerperal fever. During their régimes active measures were taken to clean and disinfect the wards by the use of lime washings and chlorine fumigation. Each ward was closed after the occupants

were discharged, thoroughly cleansed and allowed to be idle for some days. Neither master had the vision of Holmes or Semmelweis, but they made progress in the prevention of the dread puerperal fever. The first comprehensive report of the hospital was published in 1835.

Following these masters there appeared to be a great void in the history of the hospital which lasted almost fifty years. Little progress was made. Then followed Macan, Smyly and Tweedy, who brought new life into the old institution. Their interest in eclampsia gained wide recognition.

Thus each master left his mark, small or great, on the history of a great institution. Surely obstetrics has come a long way since the establishment of this famous hospital two hundred years ago. This can be noted best in the graph at the end of the book showing the number of deliveries and the maternal mortality throughout the years.

The book will be fascinating reading for all those interested in the history of obstetrics.

The Medical Annual: A Year Book of Treatment and Practitioner's Index. Editors: Sir Henry Tidy, K.B.E., M.A., M.D., and A. Rendle Short, M.D., B.Sc., B.Sc., Contributors: T. Anwyl-Davies, M.D., F.R.C.P., and others. Sixty-Fifth Year, 1947. Fabrikoid. Price, \$7. Pp. 464, with 126 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., 42-44 Triangle West, Bristol 8, England; Simpkin Marshall, Ltd., London, 1947.

Here is another edition of the time-honored Medical Annual, a British publication representing a compilation of recent advances and new thoughts on disease. Subjects are discussed in brief, giving a summary of the present day concept of the disease or disorder together with pertinent articles in the medical literature. On the whole a thoughtful and comprehensive review is presented of current scientific medical practice.

On page 51 under the heading "Clinical Entities Frequently Missed" mention is made of retention with overflow, genito-crural, osteitis pubis, referred renal pain, differential diagnosis between renal colic and acute appendicitis and ectopic ureter; however, it is difficult to know just why these five heterogeneous subjects were classified under that heading.

A practitioner's index of the new pharmaceuticals, diets and medical-surgical appliances is a welcomed addition to the back of the book, as is a list of the recent books published during the year. The carefully compiled general index makes the book useful for ready reference on various medical subjects.

In view of the continued paper and labor shortages, the publishers are to be commended for the production of this well bound, easily readable volume with suitable illustrations and references that cover the recent developments in the medical fields.

* **Cold Spring Harbor Symposia on Quantitative Biology. Volume XII: Nucleic Acids and Nucleoproteins.** Cloth. Price, \$7. Pp. 279, with illustrations. Published by the Long Island Biological Association as part of the work of the Biological Laboratory, Cold Spring Harbor, Long Island, New York, 1947.

The present volume records the latest advance in the chemistry and biology of nucleoproteins made by laboratories in this country and abroad. The reviews are thorough, authoritative and of fundamental importance. They are of most value at present to workers in genetics, virology, bacteriology and the fields of protein metabolism. It is, however, possible to predict that the practice of medicine will be affected by further research in this field. Thorell, from Caspersen's laboratory, has demonstrated changes in the nucleic acid content of the cytoplasm during the development and maturation of leukocytes and red blood cells. Maturity can now be expressed in chemical terms; which marks an advance in cell physiology. From the same laboratory, Hyden reports on protein and nucleic acid changes in nerve cells during stimulation and during the course of infection with virus. Pollister outlines some of the histochemical methods by which it is possible to gain quantitative insight into the nucleic acid and protein contents of histologic preparations. The foregoing are examples of the type of subject discussed in the twenty-five reviews comprising this volume.

The fields covered are, at present, on the periphery of medicine, but promise to invade it soon. For those active in research in the basic sciences the information contained in this volume of the Symposia is of the highest value.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THIS WILL BE OMITTED ON REQUEST.

RECURRENT PNEUMONIA

To the Editor:—An otherwise healthy boy 6 years old has in the past had numerous attacks of pneumonia, usually between November and April. During the past winter he had two attacks of virus pneumonia and one of bacterial pneumonia with complete recovery. No basic etiologic factor for the recurrent pneumonia has been demonstrated. Would he be benefited by a change to an area where the "common cold" is not so prevalent? What are the most suitable areas in the United States?

M. D., New York

ANSWER:—There are persons who have repeated attacks of pneumonia over many years for which no cause can be found and for which little can be done prophylactically. Pneumonia is said to recur more often than any other infectious disease. The literature is reviewed in Heffron's book (*Pneumonia*, New York, The Commonwealth Fund, 1939, p. 533). In such instances it is always necessary to exhaust every diagnostic possibility, bearing in mind possible allergy and congenital or other defects which hinder normal pulmonary drainage. Bronchiectasis is unlikely in a child of 6 but must be kept in mind. If, as in the case mentioned, the attacks usually occur in cold weather, it is reasonable to assume that migration to a warm climate would be helpful (Reimann, H. A.: *Viral Infections of the Respiratory Tract; Their Treatment and Prevention*, J. A. M. A. 132:487, 1946). There is no place in the world where under average circumstances "colds" and virus pneumonias do not occur occasionally (*Medicine* 26:167 and 185). The common cold may not be quite so prevalent in the Southwestern states, but here the possibility of exposure to coccidioidomycosis exists. Although this is probably not a serious risk, even that could be avoided in the more humid Southern states.

DYSMENORRHEA

To the Editor:—A patient suffers from severe dysmenorrhea. The patient is white, aged 33, having symptoms of circulatory collapse, blood pressure of 80 systolic and 40 diastolic, profuse sweating, nausea, vomiting and severe pain. These symptoms become progressively worse each month for three months; the cycle then repeats itself. The patient is a nullipara; a gynecologic examination did not reveal any abnormality. Her weight is 144 pounds (65.3 Kg.), pulse rate 80 and normal blood pressure 120 systolic and 80 diastolic. Hemoglobin was 95 per cent and basal metabolic rate minus 12. Evidence of neuroasthenic symptoms or history is absent. The patient is being treated with analgesics during menstrual periods. Dysmenorrhea with circulatory collapse lasts from twenty-four to thirty-six hours. What assistance can you offer in this case?

S. M. Abbey, M.D., Bronx, N. Y.

ANSWER:—The association of circulatory collapse with dysmenorrhea is most unusual. An attempt should be made to prevent the pain rather than treat it after it occurs. One of the simplest ways to try to prevent dysmenorrhea is by means of estrogens or androgens. The estrogens are simpler, less expensive and more often effective in preventing severe pain at the menses. The simplest form of estrogen therapy is a 1 mg. tablet of diethylstilbestrol by mouth every night for sixteen nights beginning on the third night of menstrual bleeding. If she cannot tolerate diethylstilbestrol, she should be given two injections of estradiol benzoate in oil (1.66 mg. per dose) intramuscularly a week apart during the first half of the menstrual cycle, as first recommended by Leo Wilson. The purpose of this therapy is to suppress ovulation, because it is almost certain that functional dysmenorrhea occurs only in ovulatory cycles in the presence of a functioning corpus luteum. Of course, this treatment will relieve the pain of only one menstrual cycle; hence this medication must be repeated each month. If this treatment is carried out for a number of successive months the menstrual cycles may be disturbed and the amount of bleeding may be increased. To obtain permanent relief, a pelvic sympathectomy should be done; this operation yields almost perfect results in women relieved by estrogen therapy. In this case as in nearly all cases of severe functional dysmenorrhea, there is a large psychic factor which must be taken into consideration. Psychotherapy is of great help.

ETHYL CHLORIDE ANESTHESIA

To the Editor:—Is it safe to use an ethyl chloride spray on a mask, as an induction agent for open drop ether?

Robert C. Tavlin, M.D., Moreland, Okla.

ANSWER:—The question is difficult to answer statistically. Safety is largely a factor of the knowledge, skill and experience of the administrator. Ethyl chloride is believed to have pharmacologic effects similar to those of chloroform. Hence it may affect the heart directly and cause primary cardiac failure. The boiling point is low and the vapor of ethyl chloride is less irritant than chloroform or ether. It can therefore volatilize rapidly and pass rapidly through the lungs to the blood and tissues. If intelligently used ethyl chloride is relatively safe. The following precautions are helpful. 1. The patient should have a competent heart and normal breathing with freely patent air passages. 2. Control of dosage is more accurate in drops than in a spray. (Drops from the usual container can be secured either by prechilling or by removing the glass tip.) 3. When breathing is deeply depressed or suddenly changes in character administration should be interrupted. 4. Changes in the character of the pulse and the color of the skin should be observed continuously and administration abandoned at the first evidence of circulatory embarrassment.

When nitrous oxide or other pleasant means of induction are available, few experienced anesthetists precede the administration of ether by ethyl chloride.

TATTOOING

To the Editor:—An article in the February Catholic Digest by Mary Whiteford starts out with this paragraph: "Tattooing is no longer merely a device to hallmark the swash-buckling sailor. Its practical value has raised it to the status of a science. The Chicago tattooist, Tatts Thomas, who works with a group of doctors, says the greatest value of modern tattooing is its effectiveness in cases of slight disfigurement that are not important enough for plastic surgery. 'Lots of fellows come home from service with scars that make them self-conscious but they don't have the time or money eradication by surgery would require. I develop a pigment the same color as the patient's skin, and the scar can be made almost invisible by tattooing.'" Can you advise me whether or not there is any basis in fact in this article, whether or not Mr. Thomas is an ethical person to whom we might refer a patient? Can you inquire and find out whether he has had any experience in covering up vitiligo?

M. A. Shillington, M.D., Glendive, Mont.

ANSWER:—Those engaged in plastic surgery occasionally use the method of tattoo to mask a flat scar or a portwine mark by inserting skin-colored pigments into them. The method has a limited usefulness, however, because the technic is somewhat complicated and the results are not always satisfactory. The results in vitiligo are even less satisfactory. Vitiligo is usually progressive, lesions enlarge and new ones develop. In the summertime when the surrounding normal skin becomes tanned, the patches of vitiligo are by contrast much more noticeable than in wintertime. For these reasons one would not expect tattoo to benefit vitiligo. Even "Tatts" Thomas was quick to say that the results were unsatisfactory in the few cases of vitiligo that he had "fooled with." His studio, incidentally, is located in an amusement "arcade" and is hardly the place for a physician to refer a patient. Mr. Thomas does not pretend to anything but a tattoo parlor for the "purpose of decoration."

PARALYSIS OF VOCAL CORD

To the Editor:—A white boy, aged 17 years, experienced hoarseness about three months ago for the first time. About a week later he had symptoms of an infection of the upper respiratory tract which lasted about three weeks. The hoarseness persisted and became slightly worse. He consulted an ear, nose and throat specialist who stated that he had a paralysis of his left vocal cord. His past history is essentially negative with a history of routine immunizations against diphtheria. History of rheumatic fever or exposure to tuberculosis is absent. The physical examination including a careful neurologic examination revealed no abnormalities except laryngoscopic findings. A roentgenogram of the chest by a qualified radiologist indicates that there is a low grade accentuation of marking in the right second anterior interspace without soft infiltration. Routine blood count was as follows: white blood cells, 7,000; polymorphonuclear cells, 63 per cent; lymphocytes, 33; monocytes, 1, and eosinophils, 3.

Harry Boatwright, M.D., Kingsport, Tenn.

ANSWER:—Instances of paralysis of the vocal cord and without discoverable cause for the condition make up nearly one half of all cases reported. If the cord is completely immobile the prognosis for recovery is poor; no more than 5 per cent regain function according to recent investigators.

As in the patient described it is the left cord which is most often involved. In unilateral involvement of the vocal cord of this type, the hoarseness generally improves with time due to compensatory activity on the part of the opposite healthy cord.

CLICKING SOUNDS IN EARS

To the Editor:—A patient, 29 years of age, received a relatively minor head injury approximately seven months ago in an automobile accident when his head struck the roof of the car. Loss of consciousness did not occur. Symptoms were limited to an episode of vertigo which lasted approximately one-half hour immediately after the accident. During the following week he experienced three or four episodes of severe headache centering around the vertex of the skull without nausea or vomiting. He did not have bleeding from the eyes, ears or nose. About two days after the accident, the patient noticed a persistent ticking of both ears. This ticking is distinctly audible to medical examiners from a distance of approximately 8 inches (20.3 cm.) from the patient. It is more distinct when the examiner's ear is placed against that of the patient. The ticking is not synchronous with the pulse or heart beat. It is about one and one-half times more rapid than the heart rate. The ears show no retraction of the tympanic membranes, no edema, no evidence of infection or any other pathologic change. The eustachian tubes are patent. Roentgenograms of the skull immediately following the accident and at later intervals reveal no evidence of fracture. How can you account for the objectively audible ticking and what is its treatment? Visible motion of the tympanic membranes is absent and the patient does not move his jaws or contract his jaw muscles to produce this ticking.

M.D., New York.

ANSWER:—Ticking or clicking sounds coming from the ear are frequently the result of spasmodic contraction of the muscles at the mouth of the eustachian tube or of the intratympanic muscles. Spasmodic contractions of the muscles are similar to the tic of muscles around the eye. Local therapy is ineffective.

Treatment should be directed toward eliminating any general nervous condition.

WHISKY ACIDOSIS

To the Editor:—This concerns persons who drink whisky with "club soda" and whisky with water. It is known that whisky has an acid reaction in the system and when taken with water this action is diluted but not changed as to acidity. On the other hand "club soda" has an alkaline reaction and neutralizes to a certain extent the acid reaction of whisky. Has anything appeared in medical literature indicating the advisability of using "club soda" with whisky when taken internally?

M.D., Ohio.

ANSWER:—"Club Soda" is a mildly alkaline water charged with carbon dioxide. The labels on the bottles indicate the presence of sodium citrate and sodium bicarbonate. The pH of a sample of "club soda" was found to be 8 compared to 7 for tap water. The total solids were but 0.1 per cent. Even if all of the solids were in the form of sodium bicarbonate the amount of alkali consumed would probably be insufficient to combat the long delayed acidosis of the whisky hangover.

DECHOLESTEROLIZING AGENTS

To the Editor:—I have a patient with coronary thrombosis and a high blood cholesterol content of 482 mg. per hundred cubic centimeters. She has been on a rigid low cholesterol diet for the last six weeks without appreciable change in cholesterol content of the blood. Is there a lipolytic substance available at present to reduce blood cholesterol?

Allan M. Ross, Darien, Mass.

ANSWER:—Unfortunately the blood serum cholesterol does not respond to a low cholesterol diet in a predictable fashion. In some instances it is reduced; in others it remains unchanged. Recently Herrmann (*Am. Heart J.* 33:711-712, 1947) reported using choline, methionine and inositol as decholesterolizing agents and obtained a moderate reduction in cholesterol in many cases. However, experience with these agents is still limited and more work will be necessary before their role is established.

RHEUMATIC FEVER

To the Editor:—A boy patient 8 years old has a subfebrile temperature every day, between 99 and 100 and sometimes reaching 100.4 F. His sedimentation rate was 25 and white blood cell count 10,200. A diagnosis of rheumatic fever was made, and I started treatment with salicylates and rest in bed. The temperature was affected little but the sedimentation rate came down to 14 and the white cells to 9,000. Signs of heart disease are absent. This treatment is not satisfactory because as soon as he stops receiving salicylates and gets up the temperature goes back to 100.4 and 100.6 F. What do you suggest?

Giacomo Orsillo, M.D., Elmira, N. Y.

ANSWER:—The administration of salicylates frequently reduces the sedimentation rate and the white cell count and may or may not decrease the body temperature. This effect is nonspecific and has no known influence on the underlying disease process, which, in this case, may be rheumatic fever. The administration of salicylates is believed to have value in the control of pain and discomfort rather than in antibiotic or direct therapeutic effect in rheumatic fever. It is typical for the sedimentation rate and

the temperature to rise several days after the discontinuation of salicylates.

There is no known drug for the specific treatment of rheumatic fever. If the patient shows evidence of pharyngitis, tonsillitis or other infections, it is recommended that he receive a course of penicillin as a therapeutic trial for at least a week. It is recommended that 100,000 units be injected, intramuscularly, every four hours during this period. As long as the patient has tachycardia or fever he should be kept in bed. The sedimentation rate of 25 is considered significantly abnormal and may serve as a further guide to continuing the rest in bed.

PHARMACOLOGY OF GLYCOLS

To the Editor:—A recent article in *Hygeia* describes the solvent used in penicillin mist treatment of sinus infection. What solvent was used about ten years ago to make the elixir of sulfanilamide that caused a number of deaths? Has the pharmacology of propylene glycol, triethylene glycol and ethylene glycol been studied and reported and if so where? What is the toxicity of each? Is any of them safe for use in sinus treatment? Would the propylene glycol solution produce as good results in sinus treatment without the penicillin?

G. R. Wentzel, M.D., Sunbury, Pa.

ANSWER:—The solvent used in "elixir of sulfanilamide" was diethylene glycol. Since 1937 a large amount of work has been published concerning the pharmacology of the glycols. Among the more comprehensive papers are the following:

Hanzlik, P. J., and others: Toxicity, Fats and Excretion of Propylene Glycol and Some Other Glycols, *J. Pharmacol. & Exper. Therap.* 67: 107, 1939.

Hanzlik, P. J.; Lehman, A. J.; Van Winkle, W., Jr., and Kennedy, N. K.: General Metabolic and Glycogenic Actions of Propylene Glycol and Some Other Glycols, *J. Pharmacol. & Exper. Therap.* 67: 114, 1939.

Newman, H. W.; Van Winkle, W., Jr.; Kennedy, N. K., and Morton, M. C.: Comparative Effects of Propylene Glycol, Other Glycols and Alcohol on the Liver Directly, *J. Pharmacol. & Exper. Therap.* 68: 194, 1940.

Van Winkle, W., Jr.: Quantitative Gastrointestinal Absorption and Renal Excretion of Propylene Glycol, *J. Pharmacol. & Exper. Therap.* 72: 344, 1941.

Morris, H. J.; Nelson, A. A., and Calvery, H. O.: Observations on Chronic Toxicities of Propylene Glycol, Ethylene Glycol, Diethylene Glycol, Ethylene Glycol Mono-Ethyl Ether, and Diethylene Glycol Mono-Ethyl Ether, *J. Pharmacol. & Exper. Therap.* 74: 266, 1942.

Fitzhugh, O. G., and Nelson, A. A.: Comparison of Chronic Toxicity of Triethylene Glycol with That of Diethylene Glycol, *J. Ind. Hyg. & Toxicol.* 48: 40, 1946.

Propylene glycol has about the same toxicity as glycerine. About two thirds of the administered glycol is excreted by the kidney and one third converted to lactic acid in the body and either burned or used to form glycogen. Triethylene glycol is somewhat more toxic than propylene glycol, but in the amounts used for air sterilization the margin of safety appears to be high.

Ethylene and diethylene glycols are highly toxic. Ethylene glycol is converted to oxalic acid in the body and direct damage to liver and kidney results from the action of this metabolite. Diethylene glycol is not metabolized but is directly toxic to the kidney and liver.

Regarding the use of the propylene glycol solution without penicillin, it is possible that some antibacterial effect would have been seen, since propylene glycol is known to have an antibacterial action. Whether the results would have been comparable to those of the penicillin-glycol mixture cannot be predicted.

ATROPINE IN MUMPS

To the Editor:—Is there contraindication to the use of atropine sulfate to control salivary secretion in epidemic parotitis fifteen minutes to one-half hour before mealtime so that the patient may partake of food without the usual associated pain?

D. G. Saxman, M.D., Mechanicsburg, Pa.

ANSWER:—Usually pain occasioned by eating during an attack of epidemic parotitis is not sufficiently severe to require medication. However, no serious objection exists to prescribing atropine sulfate if salivary secretions are excessive. It is often contended that atropine is not of value in the treatment of mumps.

MONGOLIAN IDIOCY

To the Editor:—In reply to the query concerning the distinction between mongolian idiosyncrasy and cretinism (*The Journal*, January 10, p. 146), you fail to mention the use of dermatoglyphics. According to the preliminary report on the work being done by Harold Cummins and R. V. Platon (*Mongolism: an Objective Early Sign*, *South. M. J.* 33: 925-928 [Dec.] 1946), palmar dermatoglyphics has substantial value for objective recognition of mongolism. Their diagnosis was accurate in about 92 per cent of a group of 83 cases, including some normal controls. In view of this showing, the possibilities of this objective early sign should be more widely known and employed.

T. D. Stewart, M.D., Smithsonian Institution,
Washington 25, D. C.

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PLACE OF NEUROANATOMY IN THE MEDICAL SCIENCES

Chairman's Address

A. R. VONDERAHE, M.D.
Cincinnati

It is fitting that once in a decade or so the science of the structure of the nervous system be recognized, that its achievements and the methods be noted and that its place in the assembly of the medical sciences be once again defined.

Perhaps any topic concerned with anatomy as such may seem somewhat strange when presented to a gathering of psychiatrists, neurologists and neurosurgeons. This, I like to think, is due to the notion that, after all, anatomy is a fairly well seasoned science with nothing very exciting to contribute, rather than to the opinion that, in the light of the new trends in medicine wherein the psyche also requires time for study, anatomy does not offer a full measure of utility. Indeed, it has been suggested that neuroanatomy may be represented by a reading acquaintance rather than by direct study of the body structure. It is known to many of you that this is not spoken lightly. It is truly a first principle that all medical arts have basic sciences. That a basic science of clinical neurology is the anatomy of the nervous system is obvious; it has been equally obvious to representatives of the American Psychiatric Association in planning training programs that the anatomy of the nervous system is a science basic also to psychiatry. This was a wise and prudent decision. It is not to the best interests of any medical art to depart too far from its material substratum even though methods of inquiry and of treatment are discovered that can fill the practitioner's time completely. Occasional practitioners may certainly, and with much benefit to all, give their full time to a purely psychologic study of the ills of mankind; but such immaterialism would be fatal, if adopted, as a principle for all to follow. Wise are they who, in the practice of psychiatry, dip from time to time into the clear well of morphology and drink deeply again of physical reality. Befitting to a psychiatrist is the recognition of the value of cultivating the anatomic sciences; the price of abandoning this point of view would be a new mysticism and a return to the emotionally charged methods of treatment and diagnosis that preceded the influence of Galen. Study the psyche and the soma too. There is

adventure in both; but the great and ancient tradition of medicine lies more surely with a view that includes the soma.

Aristotle squarely faced this issue about two thousand years ago. His view may be worth looking into again. In Homeric Greek the word *soma* refers to a cadaver, a dead body. What then is the psyche? To Aristotle it represents the sum total of activities that distinguish the living man from the dead man. There is something about working in the dissecting room and with histologic material prepared from dead tissue which serves to emphasize the distinction between living and dead. A period of life in a person followed by death is certainly a dramatic change and presents a difference fundamental enough to be the basis of a distinction. Using the Aristotelian concept, then, the term *psyche* would refer to the whole of living activity—not merely to mental activity but to all the differences that distinguish the living man from the corpse. In this way one may avoid the disturbing dichotomy which has dogged the tracks of scientists from the time of Descartes. Here is a formula for considering man as a whole living unit, the psyche not separated from the soma but the two forming an integer, a living man. Soma and psyche, then, are not actually separated, but only separable for the purposes of separate study. In the light of this view, the brain and the rest of the nervous system are not taken to be actually set apart from other structures of the body; it is the whole actively functioning living body that includes the psychologic component. Thus, the living heart and the living stomach are as important psychologically as the living brain. In the brain certain functions come to a more critical focus; but the status of the gastrointestinal tract also enters into the processes of thinking—indirectly, of course, but quite definitely.

Futile controversies setting the psyche apart from the soma, setting the mind apart from the body, can be simply and easily discarded by giving our attention to the living man as distinct from his dead counterpart. Neuroanatomy extends the hand of good will by including functioning structure in its concepts. With a great measure of credit due the studies of American investigators, the anatomic substratum of such psychologic activities as perception, volitional movement and emotion is sufficiently known to supply a basis for global functioning in an integrated living unit. Anatomists and physiologists have joined hands in elucidating the structure, connections and functions of the nervous system, so that the mechanism of the cerebral cortex, the thalamus and the striatum are sufficiently known to provide a basis for the unitary activity with which psychology deals. The anatomic substratum of

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thought, of emotion and of movement, distinguishable one from the other, yet flowing as in a stream and joined in the total purposive activity of a living unit, is fairly well known to us, and the underlying circuits within the central nervous system for carrying on such a flow of living activity are being demonstrated. Neuroanatomy thus provides the basic structural unity needed for the total harmony which is properly called integration.

CLINICAL NEUROLOGY

The role of the nervous system may be considered from two aspects: the role of the nervous system with respect to all organs of the body and the role of the nervous system as it relates to the specialty of clinical neurology. For completeness of knowledge in any specialty of medicine and surgery, knowledge of the relation of the nervous system to the organs concerned is required. Neurology, therefore, in its broadest aspect as the study of the structure and function of the nervous system, enters into all other special fields. It presents such a comprehensive base that it is not surprising to find that the delimitation of the field assigned to the specialty of clinical neurology should be difficult. Clinical neurology is interested in the whole of the anatomy of the nervous system, but treats only some of the diseases of the nervous system. This is at the root of the perennial mystery that surrounds the boundaries of clinical neurology. Considered anatomically, every special field of medicine and surgery has a neurologic aspect. While anatomy of itself, then, does not serve to delimit the field of clinical neurology, it does give the neurologist a sound foundation of interest in all other organs of the body.

The exact content of clinical neurology varies from decade to decade, as various portions of the diseases of the nervous system are assigned at one time to clinical neurologists and at another to orthopedists, pediatricians, internists and dermatologists. Traditionally, clinical neurology deals with unknowns, pursues neuroanatomy and other basic sciences of its subject matter and when causes and treatments are discovered, turns the diagnosis and treatment over to the nearest related specialty. In this way poliomyelitis anterior has been turned over to pediatricians and to orthopedists, posterolateral sclerosis to internists and syphilis of the central nervous system to internists and dermatologists. At the present time, the diseases of the nervous system still assigned to the clinical neurologist include the epilepsies, the post-traumatic states, the various forms of paraplegia and migraine. Clinical neurology should assert its right to the diagnosis and treatment of neurosyphilis and poliomyelitis anterior. It would benefit immeasurably by a clear definition of its scope.

A clinical specialty tends to grow out of some distinctive and characteristic method of examination, a method in which the development of a skill will exceed that generally possible for a man engaged in other subjects. Such a distinctive method will always be the ability to perform and interpret a physical examination of the nervous system. A distinctive diagnostic instrument may be found in the electroencephalograph, which, in addition, offers new opportunities for the correlation of neuroanatomy and neurophysiology.

NEUROSURGERY

The story of the development of modern neurosurgery is one of friendly collaboration between the neuroanatomist and the neurosurgeon. As neurosurgery developed, it delved into the vast pool of accumulated

neuroanatomic material and utilized it for the devising of operative procedures and methods of diagnosis. In turn, it has contributed and continues to contribute to the sum total of neuroanatomic knowledge. Whatever may be said of the *odium medicum* existing at times between the neurosurgeon and the clinical neurologist, no shred of jealousy appears between the neurosurgeon and the neuroanatomist. Cognizant of the benefits which they confer on one another, they tend to proceed in the spirit of collaboration. The very texture of neurosurgery is woven into the field of neuroanatomy. The collaboration between the neurosurgeon and the neuroanatomist, it is reasonable to believe, will go on; nothing will serve the field of neurosurgery better than the provision for residents in neurosurgery of a completely adequate program for the study of the anatomy of the nervous system. There should be an assigned time for this study and opportunities for pursuing some special topic of anatomic study. It is to the best interests of the neurosurgeon to foster in every possible way the development of neuroanatomy in medical colleges.

PSYCHIATRY

By turning our attention away from things as they are in fact and by utilizing a device of logic, we permit ourselves to make up separate sciences of morphology and psychology. The benefits so beautifully demonstrated in the intimate connection (and the acceptance of that intimate connection) between neurosurgery and neuroanatomy are equally to be had in the association of psychiatry and neuroanatomy. Some psychiatrists are tempted implicitly to deny the need and even the existence of the material substratum of their science. The nervous system is a reality. True to his code, the psychiatrist faces the reality of the nervous system, irrespective of the apparent difficulty presented by the intricacy of its structure and its seeming remoteness from many of his methods. Knowledge of the structure of the nervous system offers to the psychiatrist the touchstone by which he may proceed to correlate psychologic data with physiologic changes and pathologic evidences of disease. For this reason, in programs for the continued advance of psychiatry it is especially appropriate that consideration be given to the fostering of basic neuroanatomic studies in relation to those programs. To the psychiatrist, the neuroanatomist must yield any limitation of the field to pure morphology and include living functioning structure in the concept of his subject.

NEUROANATOMY AND THE MEDICAL SCHOOL

Neuroanatomy, because of some remoteness from practical application, requires sponsoring in colleges of medicine. It is of sufficient scope to justify a separate academic department; but its roots are such that it thrives as a subdepartment in the broad field of anatomy. The needs for its help continually arise. It is clear that clinical neurology, neurosurgery and psychiatry have a particular interest in a vigorous growth of neuroanatomy. It is also clear that all other fields of medicine and surgery need its help, its stabilizing influence and, in particular, its role in the process of integrating each particular specialty with the whole man. There should be provision for postgraduate students in every specialty of medicine and surgery to pursue detailed investigations into that part of the nervous system which concerns their specialty—this in addition to adequate provision for undergraduate teaching and for research. This can be accomplished

only by men within the profession who see the need and give it support. It cannot be well dramatized. It must get its support from the men to whom it freely gives of its treasures, the only men who are in any way fitted to realize its scope, its place and its contributions.

CONCLUSION

Neuroanatomy gives a firm basis for coordinating all systems of the body and therefore enters into the understanding of the functioning of all systems of the body. It enters into the fundamental knowledge required for all special fields of medicine and surgery and for the final and complete skill in the practice of these arts. It is the basis of neurosurgery and is required to avoid absurd pitfalls in the practice of general surgery. It is the heart of clinical neurology and of the understanding of its syndromes. It is a portion of that soma in psychosomatic medicine and psychiatry, remote with respect to some psychologic manifestations but nevertheless real. It cannot, therefore, be reasonable to make light of this science or to neglect the pleasantly intellectual discipline of its study, but, rather, in the measure that it is fostered in medical schools, in its own family of clinical neurology, psychiatry and neurosurgery and in relation to general medicine and all the individual specialties, in that measure can completeness, thoroughness and integration in all these fields be determined.

CORONARY FAILURE

THE CLINICAL SYNDROME OF CARDIAC PAIN INTERMEDIATE BETWEEN ANGINA PECTORIS AND ACUTE MYOCARDIAL INFARCTION

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A perplexing diagnostic problem confronts the physician when his patient complains of cardiac pain too prolonged to be consistent with a diagnosis of angina pectoris but, on the other hand, not attended by the various recognized features of acute myocardial infarction. The duration of bed rest and other details of treatment, as well as the prognosis, depend on the physician's evaluation of the underlying organic and functional changes. The problem is therefore of considerable practical and theoretical moment. The syndrome of cardiac pain which is intermediate between angina pectoris and acute myocardial infarction has been referred to in previous communications¹ by the term "coronary failure." The diversity of terms used by various authors to designate this and closely similar syndromes has led to considerable confusion.

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Because of lack of space this article has been abbreviated in THE JOURNAL by the omission of tables 2A and 2B. The complete paper will be found in the authors' reprints, which the authors will be pleased to send on request.

1. Blumgart, H. L.; Schlesinger, M. J., and Davis, D.: Studies on the Relation of the Clinical Manifestations of Angina Pectoris, Coronary Thrombosis, and Myocardial Infarction to the Pathologic Findings. *Am. Heart J.* 19: 1-91, 1940. Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. M.: Angina Pectoris, Coronary Failure and Acute Myocardial Infarction: The Role of Coronary Occlusions and Collateral Circulation. *J. A. M. A.* 116: 91-97 (Jan. 11) 1941.

The purpose of this communication is to describe the typical features of coronary failure and to indicate the spectrum-like gradation of cases between the extremes of angina pectoris and acute myocardial infarction.

Episodes of coronary failure exhibit the following clinical characteristics (table 1): 1. There is prolonged severe cardiac pain lasting from one-half hour to many hours, usually unresponsive to glyceryl trinitrate and rest. Patients often recognize that these episodes are different in quality and that the distress is commonly more intense and of longer duration than

TABLE 1.—Clinical Characteristics of Angina Pectoris, Coronary Failure and Acute Myocardial Infarction

	Angina Pectoris	Coronary Failure	Acute Myocardial Infarction
I. Clinical manifestations			
1. Pain			
(a) Onset	Sudden	Sudden	Sudden
(b) Location	Anterior part of chest—epigastrium to neck with radiation to arms	Same	Same
(c) Quality and intensity	Vague, "pain," "pressure," "squeezing," "choking"	Same as angina pectoris but more intense; similar quality	More intense, viselike
(d) Induced by	Effort, emotion, cold	Same, but may occur at rest	No necessary relation to effort, emotion or cold
(e) Duration	97% less than 3 minutes; less than 15 minutes by history*	Prolonged; longer than 20 minutes by observation and history	Usually more prolonged
(f) Frequency	Usually frequent	Infrequent	Infrequent
(g) Response to glyceryl trinitrate	Usually striking	Unusual or temporary	None
2. Peripheral vascular collapse (hypotension, sweating, nausea)	Absent	Unusual	Frequent
3. Pulmonary edema	Absent or rare	Unusual	Frequent
4. Death	Rare	Uncommon	Frequent
II. Evidences of myocardial necrosis			
1. Fever	Absent	Absent	Frequent
2. Leukocytosis	Absent	Absent	Frequent
3. Erythrocyte sedimentation rate ²	Slightly elevated (0.75 to 1.38 mm./min. in over 50%)	Same; no progressive change usually below 1.5 mm./minute	Progressive rise, over 1.5 mm./minute in 75% of cases ³
4. Pericardial friction rub	Absent	Absent	Pathognomonic when present
5. Electrocardiograms	No change or transient changes in T waves and S-T segments (depression)	Same as angina pectoris; rarely, marked changes in QRS and S-T segment may appear but are temporary and nonprogressive	Progressive changes of typical patterns usually present; conduction defects and arrhythmias common

* Riseman, J. E. F., and Brown, M. G.: The Duration of Attacks of Angina Pectoris on Exertion and the Effect of Nitroglycerin and Amyl Nitrite. *New England J. Med.* 217: 470-473, 1937.

their usual attacks of angina pectoris. 2. Attacks are infrequent compared to the oft repeated episodes of angina pectoris. 3. The attacks may be provoked by exertion, emotion or other states in which the work of the heart is increased, but they may occur during sleep or at rest. 4. Evidences of myocardial necrosis, such as sustained leukocytosis, progressive elevation of the sedimentation rate and fever, are absent. In this study the sedimentation rate has been determined by the Rourke-Ernstene method² (normal range for older age group, 0.08 to 0.70 mm. per minute). Since most of these patients have angina pectoris, the upper limit

2. Rourke, M. D., and Ernstene, A. C.: A Method for Correcting the Erythrocyte Sedimentation Rate for Variations in the Cell Volume Percentage of Blood. *J. Clin. Investigation* 8: 545-559, 1930.

of the sedimentation rate should be extended to 1.38 mm. per minute.³ 5. Electrocardiographic changes with the attacks are either absent or minor. Rarely, transient changes similar to those seen with myocardial infarction may be present for a period of hours with a subsequent return to the pattern present before the attack. Progressive electrocardiographic changes of the types characteristic of acute myocardial infarction do not occur. 6. The blood pressure usually remains unchanged. Shock and pulmonary edema rarely occur.

REPORTS OF CASES

The following cases are illustrative:

CASE 1.—A. J. H., a physician aged 65 years, entered the hospital for the third time on Oct. 11, 1940, because of prolonged precordial pain. There was a history of generalized xanthomatosis for thirty-seven years, angina pectoris for twenty years, hypertension for at least six years and cholelithiasis and cholecystectomy six years before entry. Twelve hours before entry the patient was awakened at about 1 a. m. by a severe pain in the precordial area which radiated down both arms, causing a "paralyzing sensation." Temporary relief followed the use of glyceryl trinitrate, but the pain recurred, lasted several hours, and required the injection of morphine sulfate for relief.

Physical examination on entry revealed an elderly man lying quietly in bed. The blood pressure was 150 systolic and 78 diastolic; the heart was slightly enlarged to percussion, the sounds regular and of good quality. A systolic murmur

high power field in the sediment. A complete blood count was normal, the white cell count 6,800. The nonprotein nitrogen three days after admission was 43 mg. per hundred cubic centimeters; the cholesterol was 624 mg. Electrocardiograms obtained on admission and on the fourth and eleventh hospital days (fig. 1, A, B, C) showed no significant changes. Three sedimentation rates within the first fifteen hospital days were 1.5 to 1.6 mm. per minute.

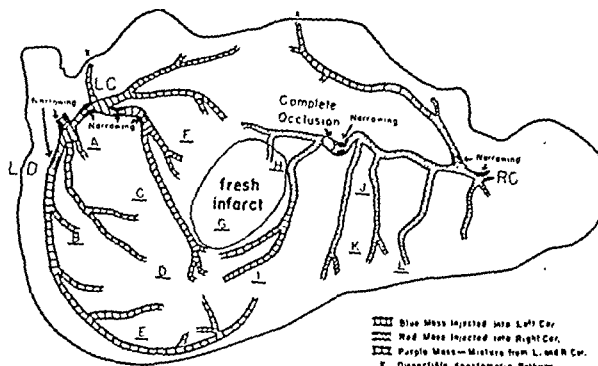


Fig. 2 (case 1, A. J. H.).—Diagram of injected, unrolled and dissected heart. Multiple tagged sections of myocardium, from areas labeled A to L, showed minimal fibrosis.

The patient's course in the hospital was uneventful. The temperature never rose above normal. The blood pressure varied little during the first twelve days (148 systolic and 76 diastolic to 162 systolic and 90 diastolic), with greater variation in the last ten days (180 systolic and 84 diastolic to 154 systolic and 76 diastolic). On several mornings, after defecation, he had attacks of angina pectoris relieved by glyceryl trinitrate, but he experienced no other episodes of cardiac pain while in the hospital.

After discharge the patient restricted his activities and suffered occasional episodes of angina pectoris relieved by glyceryl trinitrate. He reentered the hospital ten months later with clear evidence of myocardial infarction: pain in the chest of forty-eight hours' duration, shock, pulmonary edema, leukocytosis (17,000) and electrocardiograms characteristic of infarction of the posterior wall (fig. 1, D). He died on the third hospital day.

Necropsy.—The heart weighed 675 Gm.; both ventricles were hypertrophied. There was no gross evidence of fibrosis or old infarction. Microscopically, a minimal degree of focal myocardial fibrosis and a fresh infarct were found (fig. 2).

Coronary Arteries: There were pronounced arteriosclerosis and narrowing⁴ in all three main coronary arteries as well as in branches of the left circumflex and right coronary arteries (fig. 2). A fresh occlusion, caused by an edematous atheromatous plaque, was present in the distal third of the right main coronary artery. A well developed anastomotic circulation was demonstrated.

Comment.—The episode of prolonged cardiac pain in this case was not associated with clear evidence of myocardial necrosis. The temperature and white cell count remained normal. The sedimentation rate, though moderately elevated (a not uncommon finding in patients with angina pectoris⁵), was unchanged during the period of observation. The characteristic electrocardiographic patterns of myocardial infarction were absent, and at postmortem examination no old healed infarct and little fibrosis were found. The minor electrocardiographic changes seen in this patient (fig. 1) have also been observed with hypertension and non-cardiac illnesses.⁶ The attack of coronary failure ten

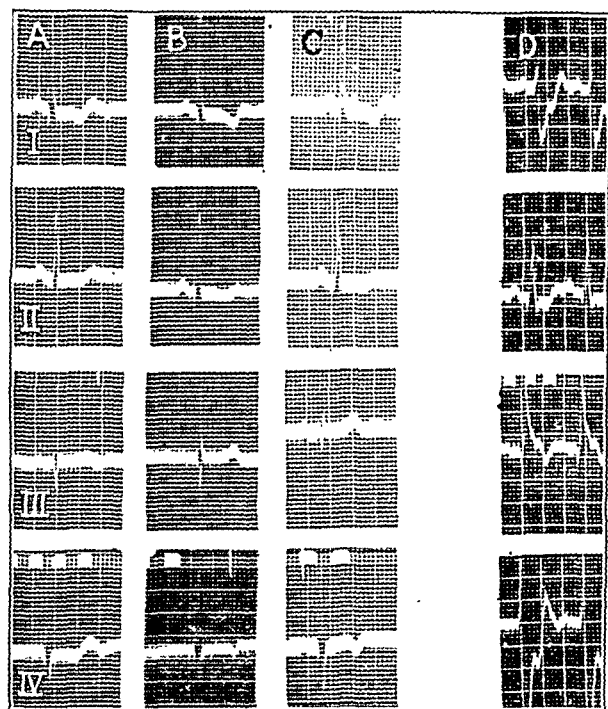


Fig. 1 (case 1, A. J. H.).—A, electrocardiogram Oct. 11, 1940, shortly after the attack of coronary failure, showing left axis deviation and diphasic T waves in leads 1 and 4. The S-T intervals in leads 1 and 4 are slightly depressed. B and C, electrocardiograms of Oct. 14 and 21, 1940, showing the T waves in leads 1 and 4 somewhat more inverted. D, electrocardiogram three days before death, showing bundle branch block and right axis deviation and markedly depressed S-T intervals in leads 1, 2 and 4. The S-T interval in lead 3 is elevated and coved and the T wave in lead 3 is inverted.

was present at the apex. There was no evidence of congestive failure or shock. The temperature was 98.6 F. rectally, pulse rate 62 and respiration rate 20.

Laboratory Data.—On admission, the urine contained albumin (1 plus), with occasional white cells and 1 to 2 red cells per

3. Riseman, J. E. F., and Brown, M. G.: The Sedimentation Rate in Angina Pectoris and Coronary Thrombosis, *Am. J. M. Sc.* 194: 392-399, 1937.

4. Schlesinger, M. J.: An Injection Plus Dissection Study of Coronary Artery Occlusions and Anastomoses, *Am. Heart J.* 15: 528-568, 1938.

5. (a) Zoll, P. M.; Freedberg, A. S.; Spiegl, E. D., and Blumgart, H. L.: Unpublished data. (b) Marvin, H. M.: The Diagnosis of Coronary-Artery Disease, *New England J. Med.* 226: 251-254, 1942. (c) Freedberg, A. S., and Lewis, H. D.: The Normal Heart in Old Age, *ibid.* 231: 731-738, 1944.

months before death may have been coincident with the occurrence of fresh narrowing in the coronary system, for which compensatory anastomosis was quickly developed.

CASE 2.—E. A., a man aged 59 years, entered the hospital for the third time on Sept. 23, 1937, complaining of attacks of angina pectoris for twelve years which had increased in frequency in the previous two months. The attacks were relieved in one to two minutes by glyceryl trinitrate, but lasted one-half to one hour if glyceryl trinitrate was not taken. There were, however, no episodes lasting longer than an hour. There had been no symptoms of congestive failure. On entry the heart was enlarged, the heart sounds regular and slow, the first sound muffled and of poor quality, the second sound of good quality; the second aortic sound was not accentuated. There was moderate generalized arteriosclerosis. The blood pressure was 154 systolic and 104 diastolic.

During his first month in the hospital, the patient had many attacks of angina pectoris, averaging about three daily, relieved in one to five minutes by the administration of 1/200 grain (0.3 mg.) of glyceryl trinitrate. Five months before death, while still in the hospital, he had a severe attack, during a period of pronounced emotional stress, of substernal pain which lasted two hours and was not relieved by glyceryl trinitrate. Morphine sulfate, 1/6 grain (10 mg.), gave some relief, but had to be repeated. A complete blood count taken that day showed 5,250,000 red blood cells, 97 per cent hemoglobin (Sahli), 11,200 white blood cells, with 78 per cent polymorphonuclear cells. A white blood cell count the following day was 7,650, and two subsequent counts were normal. Four sedimentation rates varied from 0.22 to 0.6 mm. per minute. Four electrocardiograms obtained during the first eight days showed no significant changes compared with an earlier tracing (fig. 3). There was no elevation of temperature or change in the blood pressure or pulse. Twelve days later, at 2 a. m., the patient had another attack of pain in the chest lasting thirty minutes, unrelieved by glyceryl trinitrate; morphine was refused. Following this episode, there were no changes in temperature, blood pressure, heart

seen microscopically. There were no old or fresh infarcts, but the myocardium near the apex had a dusky cyanotic color; microscopically this area showed no necrosis. The valves were normal.

Coronary Arteries: There was extensive coronary arteriosclerosis (fig. 4), with four old occlusions in the main stems of the left descending, left circumflex and right coronary arter-

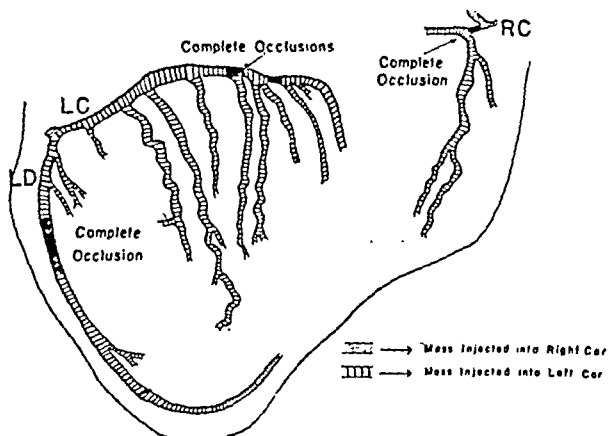


Fig. 4 (case 2, E. A.).—Diagram of injected, unrolled and dissected heart.

ies. The ventricles received their entire blood supply from branches of the left coronary artery proximal to the occlusions. There were no fresh occlusions.

Comment.—This case is of particular interest because all three major coronary arteries had been completely occluded for some time, despite which there were no clinical or pathologic evidences of myocardial infarction. The patient had had many attacks of prolonged pain in the chest lasting one-half hour or more and had had two such episodes while in the hospital, one of which lasted two hours. These attacks were not followed by significant changes in the electrocardiogram, sedimentation rate, temperature or white blood cell count. These episodes conform to the clinical characteristics of coronary failure, and postmortem examination confirmed the absence of healed myocardial infarction.

CASE 3.—D. R., a man aged 70 years, had had angina pectoris for twenty years. Nineteen and one-half years previously he entered another hospital because he was unable to walk one block without experiencing severe attacks of pain in the chest. The pain was occasionally transmitted down the left arm. He had had many severe attacks of substernal pain lasting one to two hours with no relief by rest. On three occasions he had been awakened from sleep by these attacks of pain.

Physical examination revealed a slightly enlarged heart, moderately sclerosed peripheral arteries and a blood pressure of 145 systolic and 75 diastolic. The sounds were somewhat distant but of normal quality; the rhythm was regular and there were no murmurs. He was discharged eleven days after admission, although still suffering from slight anginal attacks while at bed rest and more severe attacks when he was up and about.

His condition was supervised in the outpatient department of the Beth Israel Hospital during the four years preceding his death. The attacks of angina pectoris continued unchanged until fifteen months before death, when he entered the hospital. During the previous two weeks the attacks had been particularly severe at night, and the night before entry he had had pain in the chest lasting three hours. There was no cough, hemoptysis, pleuritic pain or orthopnea. On entry he appeared moderately ill and slightly cyanotic. The temperature was 98.6 F., the heart rate 80, radial pulse rate 66, respiration rate 24. The blood pressure was 152 systolic and 92 diastolic. The heart was enlarged, the sounds distant. There were many extrasystoles, which accounted for the pulse deficit; there were no

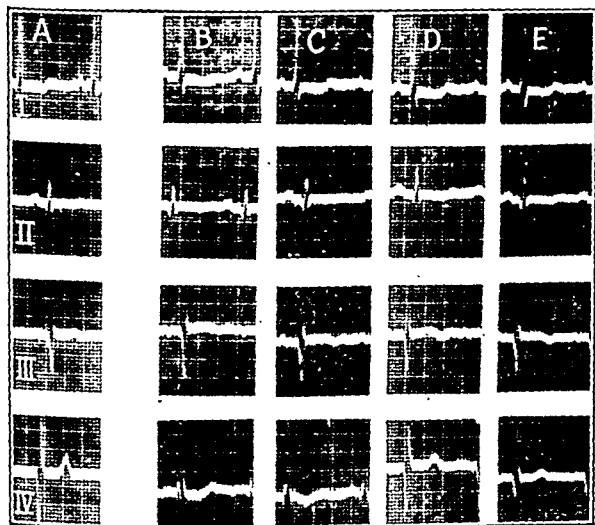


Fig. 3 (case 2, E. A.).—A, electrocardiogram May 29, 1937 showing left axis deviation; the T wave in lead 1 is diphasic, in lead 2 is flat and in lead 4 is negative (old method). B, C, D and E, electrocardiograms of October 22, the day of the attack of coronary failure, and October 26, 27 and 29, showing minor changes in lead 4 (old method). In B and C the initial positive deflection of the QRS complex in lead 4 is minimal; in B and C the T wave is diphasic. In C, D and E the T wave in lead 3 shows late inversion.

rate or white blood cell count, and the patient was allowed out of bed and discharged one week later. He returned to the clinic, with recurrent attacks of angina pectoris, showed the signs of chronic passive congestion and, approximately five months later, died in congestive failure.

Necropsy.—The heart weighed 610 Gm. There was considerable diffuse fibrous myocarditis throughout the heart best

murmurs. There were dulness and fine rales at the bases of both lungs. There was no peripheral edema or evidence of shock; decided arteriosclerotic changes were noted in the eye grounds and extremities.

Laboratory Data.—Repeated urinalyses showed occasional albuminuria, a finding noted twenty years previously. On entry a complete blood cell count was normal with a white cell count of 8,900. The Hinton and Kahn reactions were negative. Three sedimentation rates were 0.5 to 0.6 mm. per minute. Five white blood cell counts in the first two weeks varied between 8,650 and 11,600. Three electrocardiograms during the first hospital week showed no changes from previous electrocardiograms (fig. 5).

During the first week the patient had several attacks of pain in the chest relieved by glyceryl trinitrate in about fifteen to twenty minutes, but thereafter he was free of pain in the chest. The temperature was never elevated during the hospital stay of thirty-two days. While the blood pressure was rather constant, ranging from 140 systolic and 78 diastolic to 138 systolic and 90 diastolic, occasional readings of 170 systolic and 110 diastolic or 180 systolic and 80 diastolic were obtained.

After discharge he continued to have substernal pain on slight exertion. He reentered the hospital fourteen months later, three days before death, complaining of severe precordial pain twelve hours in duration. He died in shock on the third hospital day with the characteristic clinical and electrocardiographic evidences of acute myocardial infarction.

Necropsy.—The heart weighed 680 Gm. Both ventricles were hypertrophied and showed slight diffuse myocardial fibrosis

grossly and microscopically. There was no evidence of an old myocardial infarct. There was a fresh myocardial infarct involving the posterior portion of the left ventricle and septum.

Coronary Arteries: All three major coronary arteries showed extensive arteriosclerosis and narrowing (fig. 6). Zones of narrowing were also present in branches of the left descending and right coronary arteries. An anastomotic circulation was demonstrated between the left descending and right coronary arteries. There was a fresh attached thrombus in the main stem of the right coronary artery. No old occlusions were found.

Comment.—This 70 year old man had had angina pectoris for twenty years, the onset of which was characterized by attacks of cardiac pain lasting one to two hours. In 1939 he had had an attack of cardiac pain of three hours' duration following which careful study revealed no shock, fever, sustained elevation of white count or sedimentation rate, or electrocardiographic changes. This episode and the episodes associated with the onset of angina pectoris conform to the clinical characteristics of coronary failure. The absence of healed myocardial infarction at necropsy is consistent with this interpretation.

The myocardial fibrosis seen at necropsy may have been a consequence of the episodes of coronary failure.

It is known that diffuse myocardial fibrosis is a common pathologic finding in angina pectoris, representing the end result of frequent ischemic episodes which lead to death and replacement of small numbers of muscle fibers. Similarly, in coronary failure certain of the ischemic muscle fibers may undergo degeneration and

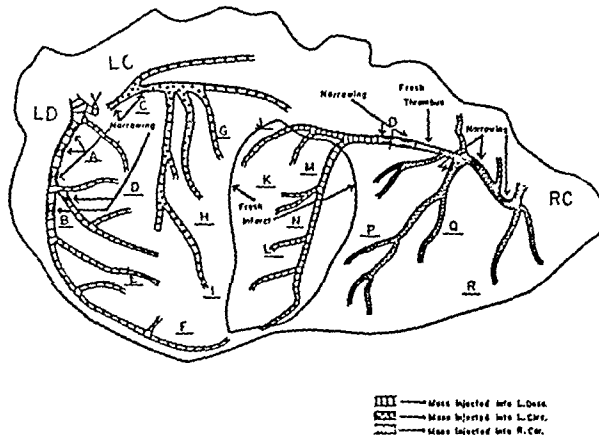


Fig. 6 (case 3, D. R.).—Diagram of injected, unrolled and dissected heart. Multiple tagged sections of myocardium from areas labeled A to R showed slight diffuse fibrosis.

replacement by fibrous tissue. The total number of fibers or the size of the area involved, however, is not large enough to result in clinical evidence of myocardial necrosis. As in angina pectoris, the vast majority of muscle fibers in the involved area, although ischemic, evidently recover without damage.

CASE 4.—L. S. L., a man aged 70 years, had had hypertension for fourteen years and angina pectoris for eleven years. In October 1931, he first noted the onset of precordial oppression radiating to the upper part of the left arm on walking, which was relieved by rest. These attacks occurred several times daily. In June 1932, after unusual exertion one afternoon, he suffered a moderately severe attack of "angina pectoris," lasting ten to fifteen minutes and incompletely relieved by glyceryl trinitrate. An uncomfortable sense of substernal oppression and gas continued until 1 a. m., when he experienced a severe attack of substernal pain. The pain radiated to the left shoulder blade and down both arms to the wrists, lasted one-half hour and was not affected by nitrites. A heavy substernal oppression persisted for ten hours.

Physical examination showed a man propped up in bed with no signs of cyanosis or congestive failure. The heart was enlarged to the left, the rhythm regular and the rate 90. The sounds were of good quality and there was no friction rub or murmurs. The temperature was 98 F., the blood pressure 200 systolic and 115 diastolic to 190 systolic and 110 diastolic without alternation. A note by a prominent cardiologist stated, "A small coronary occlusion seems almost certain. He appears at the moment in good condition, comfortable but restless." An electrocardiogram taken four days later was similar in all respects to those seen previously (fig. 7, A, B). Conservative treatment of approximately three weeks in bed with toilet privileges was recommended. After this episode he continued to have angina pectoris on exertion and emotion.

In November 1936, approximately six years before death, he suffered a typical attack of acute myocardial infarction, characterized by severe, precordial pain lasting thirty-six hours, fever, peripheral vascular collapse and electrocardiographic changes (fig. 7, C, D) indicative of involvement of the posterior wall.

Except for continued attacks of angina pectoris and a mild cerebrovascular accident in 1938, the patient remained essentially the same until one and one-half years before death. At 3:30 p. m. on July 15, 1940, he began to have colicky pain in the left lower quadrant, dysuria, frequency and urgency due to vesical calculi. The same evening, while in bed, he suddenly

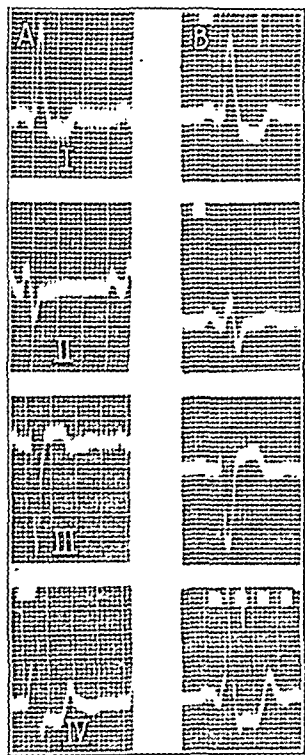


Fig. 5 (case 3, D. R.).—A, electrocardiogram, Dec. 8, 1937, showing left bundle branch block. B, electrocardiogram, Nov. 9, 1939, shortly after the attack of coronary failure (one of three identical tracings), showing no changes from A.

electrocardiographic changes. This episode and the episodes associated with the onset of angina pectoris conform to the clinical characteristics of coronary failure. The absence of healed myocardial infarction at necropsy is consistent with this interpretation.

The myocardial fibrosis seen at necropsy may have been a consequence of the episodes of coronary failure.

experienced severe substernal pain radiating to the inner aspects of the left arm, not relieved by three doses of glyceryl trinitrate. One hour later the patient felt weak and appeared somewhat restless, pale and perspiring. The blood pressure was 180 systolic and 90 diastolic. The heart sounds were good, and the rate was somewhat elevated. At this time an electrocardiogram showed decided changes with a pattern of acute injury of the basal posterior wall (fig. 7, E). The pain subsided in two and one-half hours after two injections of 1/6 grain (10 mg.) of morphine. The white blood cell count was 10,000. One week later it was 8,400 and the sedimentation rate was 0.8 mm. per minute.

The morning after the attack the patient felt well and had had no recurrence of pain; the blood pressure was 210 systolic and 104 diastolic. An electrocardiogram showed a reversion to his usual pattern (fig. 7, F). In the absence of subsequent electrocardiographic changes, leukocytosis and elevated sedimentation rate, this attack was regarded as one of coronary failure. The patient had an uneventful course, was kept in bed two and one-half weeks and then allowed to resume his usual, limited activities. He died in coma one and one-half years later, in February 1942, of a massive cerebral hemorrhage.

Necropsy.—The heart weighed 440 Gm. There was hypertrophy of both ventricles. There was an old healed myocardial infarct in the posterior basal portion of the left ventricle, measuring approximately 2.5 cm. in diameter. In addition, there were focal areas of subendocardial fibrosis in the posterior wall.

Coronary Arteries: All three main coronary arteries showed pronounced arteriosclerosis and narrowing (fig. 8). Four old occlusions were found, one in each main coronary artery and one in a primary branch of the left descending. A well developed anastomotic circulation with many dissectible channels was present beyond each occlusion.

Comment.—This patient with angina pectoris for eleven years had two attacks of prolonged cardiac pain without clinical evidences of myocardial necrosis and one attack characteristic of acute myocardial infarction. The attacks of coronary failure, in the light of the post-mortem findings, might well have been coincident with coronary occlusion. One may entertain the possibility

The absence of the clinical evidences of myocardial infarction (persistence of fever, leukocytosis, elevated sedimentation and of electrocardiographic changes) renders such an interpretation untenable.

This case illustrates several of the salient characteristics of coronary failure. The pain was more severe

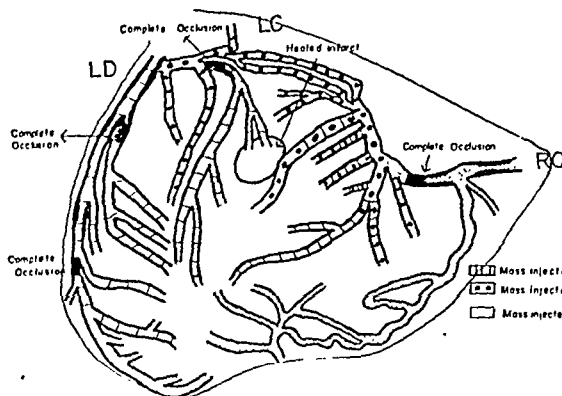


Fig. 8 (case 4, L. S. L.).—Diagram of injected, unrolled and dissected heart. Eighteen tagged sections taken throughout both ventricles showed scattered fibrosis in posterior wall in addition to the old infarction.

and prolonged than that experienced by the patient in his usual attacks of angina pectoris. The attacks occurred at irregular and infrequent intervals, were attended by weakness but none of the evidences of myocardial necrosis. One of the two attacks of coronary failure followed unusual exertion and the other followed colic due to vesical calculi. It is of considerable interest that during this latter attack of pain there were conspicuous electrocardiographic changes but that the preexisting electrocardiographic pattern returned shortly after the subsidence of pain. It has been recognized that during attacks of angina pectoris electrocardiographic changes may occur similar to those following attacks of myocardial infarction; these changes, however, disappear with the subsidence of the attack of angina pectoris.⁶ In this patient a striking example of such a sequence of events was witnessed.

GENERAL COMMENT

The accumulation of knowledge regarding cardiac pain has been accompanied by a diversity of opinion concerning the applicable diagnostic terms. The confusion in terminology has resulted largely from numerous attempts to characterize more accurately those episodes of cardiac pain that are clearly neither angina pectoris nor acute myocardial infarction. Some authorities, because of the considerable variety of clinical episodes and coronary and myocardial changes, have deemed it inadvisable or impossible to differentiate the various types of cardiac pain and therefore denote all cardiac pain as indicative of "coronary insufficiency." Other authors have used "coronary insufficiency" to denote entirely different concepts. Master,⁷ for example, stated, "coronary insufficiency is a useful term when restricted to necrosis or infarction of the heart without complete occlusion." More recently, however, Master^{8a} has used the terms "coronary insufficiency with-

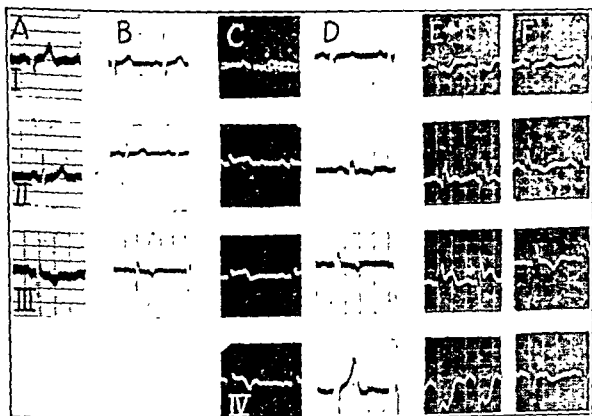


Fig. 7 (case 4, L. S. L.).—A, Electrocardiogram, Feb. 13, 1928, showing deep Q and inverted T wave in lead 3. B, electrocardiogram identical with one obtained four days after attack of coronary failure in June 1932, showing no change from A. C, electrocardiogram, Nov. 3, 1936, showing changes characteristic of infarction of the posterior wall. Artefacts due to alternating current are present. D, electrocardiogram similar to those obtained after recovery from myocardial infarction, showing inverted T waves in leads 2 and 3; the Q waves in leads 2 and 3 are present; the T wave in lead 4 is upright and high in this record; in others the T wave in lead 4 is lower. E, electrocardiogram obtained during attack of coronary failure, July 15, 1940, showing an elevated S-T interval in leads 2 and 3, and markedly depressed S-T interval in leads 1 and 4. F, electrocardiogram nine hours later, showing reversion to previous pattern. The T wave in lead 4 is inverted in this record.

that the prolonged attacks of pain may have resulted in infarction in the same area as that in the episode of acute posterior myocardial infarction which occurred in 1936.

6. Wilson, F. N., and Johnston, F. D.: The Occurrence in Angina Pectoris of ... Similar in Magnitude and in Kind to the ... Infarction, *Am. Heart J.* 22: 64-74, 1941.
C. C.: Angina Pectoris: The Clinical and Electrocardiographic Phenomena of the Attack and Their Comparison with the Effects of Experimental Temporary Coronary Occlusion, *Arch. Int. Med.* 47: 339-365 (March) 1931.
7. (a) Master, A. M.; Dack, S., and Jaffe, H. L.: Nomenclature in Coronary Artery Disease, *Mod. Conc. Cardiovasc. Dis.*, 1941, vol. 10, No. 11. (b) Master, A. M.: Acute Coronary Artery Insufficiency With and Without Acute Occlusion, *New York Med.* 2: 19-22, 1946.

out acute occlusion" and "coronary insufficiency with acute occlusion." These are diagnostic distinctions which, in the light of our studies,¹ could be applied only to the cadaver. Continued use of these terms would seem to promote only further confusion; we therefore designate the syndrome of cardiac pain intermediate between angina pectoris and acute myocardial infarction as "coronary failure." This term connotes failure of the coronary circulation, however it may be produced, which is more prolonged than angina pectoris without, however, producing acute myocardial infarction.

The results of our previous studies of the clinical manifestations and pathologic finding in patients with cardiac pain forced us to abandon the usual terminology and classification of "coronary occlusion" and "coronary thrombosis" because of the frequent disparities that were encountered between such clinical diagnoses and pathologic observations. Coronary occlusion in and by itself produces no characteristic syndrome; in some cases old coronary occlusions have been found without any damage to the heart muscle and without having produced during the patient's lifetime any symptoms or signs of heart disease. Furthermore, our studies, as well as those of others,⁸ amply demonstrate that acute infarction may occur without fresh thrombi or occlusions and that fresh thrombi or acute occlusions of a coronary artery may occur without producing myocardial infarction. In actual practice, the terms "coronary occlusion" and "coronary thrombosis" have been widely employed to designate attacks of prolonged cardiac pain accompanied by evidences of myocardial necrosis; i.e., the occurrence of acute myocardial infarction, and it is therefore more accurate to employ the latter term. It is believed that much of the current debate on nosology⁹ revolves about this point. The differentiation of the causes of infarction is necessarily determined by pathologic study; acute myocardial infarction is the lesion which gives rise to the clinical symptoms and signs, regardless of the mechanisms of its production.

Observations¹⁰ in patients with angina pectoris support the prevailing concept that this syndrome is associated with transitory relative myocardial ischemia. The pathologic findings provide a basis for this concept. Practically every patient suffering from angina pectoris without evidence of valvular disease or arterial hypertension showed at postmortem examination old complete occlusion of at least one major artery; in the majority of instances at least two of the three main coronary arteries had been occluded before the terminal illness. That the heart muscle may frequently recover without structural damage if the degree or duration of

the myocardial ischemia is not too great is amply shown by the clinical characteristics, electrocardiographic studies and pathologic findings in patients with angina pectoris. Further support is afforded by experimental observations on the effect of artificially induced temporary coronary occlusions in animals.¹¹

Between the episodes of temporary reversible myocardial ischemia of angina pectoris and the attacks of irreversible necrosis of myocardial infarction lie the episodes of prolonged myocardial ischemia, which constitute the intermediate group of coronary failure. The clinical characteristics differentiating the three syndromes of angina pectoris, coronary failure and acute myocardial infarction are listed in table 1. Logically, one would anticipate a continuous gradation of cases between the two extremes of short attacks of angina pectoris without myocardial damage and massive infarction of the heart. It may be seen that the cases of coronary failure, listed in tables 2A and B, fall in various portions of the spectrum between angina pectoris and myocardial infarction. For example, the second episode observed in case 2 and the episode in case 11 approach the characteristics of angina pectoris, while the first episode observed in case 5 and the episode in case 7 lie in that portion of the spectrum closer to acute myocardial infarction. As has been pointed out in previous communications,¹ the underlying pathologic physiology of all myocardial pain is identical; the clinical and pathologic consequences depend on the duration and degree of the myocardial ischemia and not on the particular mechanism of its production.

✓ In accord with the concept that cardiac pain is due to relative myocardial ischemia, attacks of coronary failure are occasionally coincident with increased demands on the heart such as paroxysmal arrhythmia, emotion or effort; in other instances decreased coronary blood flow consequent to hypotension in shock due to hemorrhage, infection, dehydration, etc., is apparently responsible. When attacks of coronary failure occur without apparent precipitating factors or in circumstances which have not previously provoked pain, a recent reduction of coronary blood flow may be postulated. Such attacks may be due to the occurrence of acute coronary narrowing or occlusion. The exact pathologic mechanism of narrowing or occlusion—i.e., atherosclerosis, thrombosis, embolism, ulceration of an atheromatous plaque, subintimal hemorrhage or edema—is beyond determination by clinical means. Such instances of coronary failure are occasionally followed after an interval of hours or days by an attack of acute myocardial infarction. This results from final death of an ischemic area, which may occasionally be due to the propagation of a thrombus superimposed on a subintimal hemorrhage or on the ulcerated area of an atheromatous plaque. This sequence of events has been described clinically by Feil¹² and Sampson and Eliaser.¹³

Just as the intensity-time factor of cardiac pain may be considered to vary from relatively slight in angina pectoris, through more severe in coronary failure, to profound in acute myocardial infarction, the clinical reflection of myocardial ischemia varies from slight and

8. Levy, R. L., and Bruenn, H. G.: Acute, Fatal Coronary Insufficiency, *J. A. M. A.* **106**: 1080-1085 (March 28) 1936. Saphir, O., Priest, W. S., Hamburger, W. W., and Katz, L. N.: Coronary Arteriosclerosis, Coronary Thrombosis and the Resulting Myocardial Changes: An Evaluation of Their Respective Clinical Features Including the Electrocardiographic Records, Based on the Anatomical Findings, *Am. Heart J.* **10**: 567-595 and 762-792, 1935. Bean, W. B.: Infarction of the Heart: III. Clinical Course and Morphological Findings, *Ann. Int. Med.* **12**: 71-93, 1938. Gross, H., and Sternberg, W. H.: Myocardial Infarction Without Significant Lesions of Coronary Arteries, *Arch. Int. Med.* **64**: 249-267 (Aug.) 1939. Friedberg, C. K., and Horn, H.: Acute Myocardial Infarction Not Due to Coronary Artery Occlusion, *J. A. M. A.* **112**: 1675-1679 (April 29) 1939.

9. Master, J. B., Jacobsen, V. C.: Coronary Occlusion and Thrombosis and Myocardial Infarction, Correspondence, *J. A. M. A.* **130**: 530 (Feb. 23) 1946. Field, L. E.: Coronary Occlusion and Myocardial Infarction, Correspondence, *ibid.* **131**: 353 (May 25) 1946.

10. Keefer, C. S., and Resnik, W. H.: Angina Pectoris: A Syndrome Caused by Anoxemia of the Myocardium, *Arch. Int. Med.* **41**: 769-807 (June) 1928. Rothschild, M. A., and Kissin, M.: Production of the Anginal Syndrome by Induced General Anoxemia, *Am. Heart J.* **8**: 729-744, 1933. Riseman, J. E. F., and Brown, M. G.: The Effect of Oxygen on the Exercise Tolerance of Patients with Angina Pectoris, *ibid.* **18**: 150-152, 1939. Footnote 1.

11. Blumgart, H. L.; Hoff, H. E.; Landowne, M., and Schlesinger, M. J.: Experimental Studies on the Effect of Temporary Occlusion of Coronary Arteries in Producing Persistent Electrocardiographic Changes, *Am. J. M. Sc.* **104**: 493-502, 1937. Bayley, R. H.; LaDue, J. S., and York, D. J.: Electrocardiographic Changes (Local Ventricular Ischemia and Injury) Produced in the Dog by Temporary Occlusion of a Coronary Artery, Showing a New Stage in the Evolution of Myocardial Infarction, *Am. Heart J.* **27**: 164-169, 1944.

12. Feil, H.: Preliminary Pain in Coronary Thrombosis, *Am. J. M. Sc.* **193**: 42-48, 1937.

13. Sampson, J. J., and Eliaser, M., Jr.: The Diagnosis of Impending Acute Coronary Artery Occlusion, *Am. Heart J.* **13**: 675-686, 1937.

reversible manifestations in angina pectoris through more readily perceptible phenomena in coronary failure to striking and sustained changes in acute myocardial infarction. Thus, minor electrocardiographic changes or even patterns which, if sustained, would indicate a diagnosis of acute myocardial infarction, are witnessed as transitory concomitants of attacks of angina pectoris.⁶ Elevations in the sedimentation rate varying in duration and degree likewise have been reported in patients with frequently repeated severe attacks of angina pectoris.⁷ The finding of diffuse fibrosis, the "chronic fibrous myocarditis" described by pathologists in some instances of angina pectoris or coronary failure, may well represent the end result of the summation of repeated numerous microscopic insults during which temporary myocardial ischemia has progressed to the stage of death of small numbers of muscle fibers with subsequent fibrosis.

In coronary failure, electrocardiographic changes are usually absent or slight; in those instances representing the more severe gradations, transient and at times striking changes may be observed for some hours, followed by reversion to the previous pattern. Similarly, in the cases falling in that part of the spectrum which approaches acute myocardial infarction, slight transient fever, temporary rises in sedimentation rate and rarely leukocytosis may be observed. Between characteristic angina pectoris, characteristic coronary failure and characteristic acute myocardial infarction, these innumerable gradations will be observed, but the diagnostic criteria here set forth permit a clearer and more accurate differentiation of cardiac pain and have served as valuable guides in the clinical management of patients.

The diagnosis of coronary failure is of practical importance, for the treatment differs from that of angina pectoris and of acute myocardial infarction. Such patients are exposed to considerable hazard if, as are patients with angina pectoris, they are advised to continue or reduce only slightly their usual activities. On the other hand, prolonged bed rest may lead to undue hardship, anxiety and major complications. When a patient is first seen during or immediately after an attack of severe cardiac pain, the precise diagnosis often cannot be made. It has been our practice to confine such patients to bed and observe the course of symptoms and signs. If changes in temperature, pulse, white blood cell count, sedimentation rate and electrocardiograms do not occur or are equivocal, minor or evanescent, the patient is permitted to assume gradually increasing activity, sitting up in a chair after several days and then becoming ambulatory. In each case clinical judgment may modify the regimen, but in any event the episode will not be dismissed as an attack of angina pectoris nor will the patient be bedridden for many weeks. Should the attack of coronary failure be the forerunner of myocardial infarction, the patient will be under favorable conditions permitting early diagnosis and immediate treatment.

SUMMARY

The clinical and pathologic characteristics of the syndrome of acute coronary failure, intermediate between angina pectoris and myocardial infarction, are delineated. Seventeen cases have been presented; 4 are discussed in detail; the rest are summarized. Analysis of the group as a whole shows a continuous gradation in severity of coronary failure between the limits of angina pectoris and acute myocardial infarction.

Characteristic episodes of coronary failure consist clinically of prolonged cardiac pain more intense than

angina pectoris, unresponsive to glyceryl trinitrate and rest and without objective evidences of myocardial necrosis; sustained or progressive fever, leukocytosis, elevated sedimentation rate and electrocardiographic patterns of infarction are absent. Presumably, the underlying physiopathologic mechanism of these attacks of pain is prolonged but reversible myocardial ischemia. Correspondingly, on pathologic examination, no resultant myocardial infarction or extensive fibrosis can be found.

Coronary failure is precipitated in many instances by a specific clinically obvious factor which causes either sudden increase in cardiac work or diminished coronary blood flow; on the other hand, the attack often occurs at rest or during sleep. It seems likely that in some of these latter episodes without evident clinical precipitating factor the sudden relative diminution in coronary blood flow is due to acute narrowing or occlusion in the coronary tree.

The therapeutic management of episodes of this intermediate syndrome of acute coronary failure depends on clinical recognition and proper evaluation of the underlying physiologic and pathologic changes. The treatment of patients with coronary failure differs from that of angina pectoris and of acute myocardial infarction. They must not be advised, as in angina pectoris, to continue or reduce only slightly their usual activities, nor, on the other hand, should they be confined to bed for long periods of time as in acute myocardial infarction. Patients with prolonged cardiac pain should be observed closely for several days in order to determine whether they exhibit the clinical characteristics of coronary failure; if so, they may be permitted to assume gradually increasing activity, sitting up in a chair after several days and then becoming ambulatory.

ABSTRACT OF DISCUSSION

DR. W. D. STROUD, Philadelphia: The most that I know about coronary artery disease and collateral circulation has been obtained from the work of Dr. Blumgart and his associates. I feel from that work, if a patient with angina pectoris asks whether he is ever going to get rid of his pain, one is justified in saying that there is a possibility that he will. If adequate collateral circulation develops after the narrowing of a coronary artery or an occlusion, the pain may well disappear. I also feel that when the pain has gone and the patient feels perfectly well one should explain the development of the collateral circulation and that it is important for the heart to beat as slowly as possible for a number of weeks; hence the patient should be quiet so that the healed scar will be more efficient. If these things are explained, usually the patient will cooperate. Regarding the cases which have been presented, I should like to make one point. I am not positive that it is a good idea to get these patients with coronary occlusion around too soon. I feel in these cases of so-called coronary failure the patients should be kept either in bed or in a chair with bathroom privileges for at least two weeks. I know of 2 cases that I would have diagnosed as this type of coronary failure, in which there never was any increase in fever, sedimentation rate or leukocyte count, but in 1 instance fourteen days, and in the other case fifteen days after the episode, the electrocardiogram showed definite evidence of coronary occlusion. I think that we should be conservative in our treatment of patients who have given such strong clinical evidence of coronary occlusion before we make up our minds that they have coronary failure.

DR. ARTHUR M. MASTER, New York: Although the laboratory of the authors is hundreds of miles from ours in New York, our results have been similar. Since they are minor, it might be well to speak of our differences of opinion. The authors use the term "coronary failure" to describe episodes

between a simple attack of angina pectoris and a severe attack with myocardial infarction. It is difficult to find a name that suits all conditions and physicians but if the matter of terminology already is difficult, why add another term unless it makes for clarification and simplification? I believe that the cases of coronary failure described by the speakers fall into the classification of coronary insufficiency as used by us and other workers. We have divided acute coronary disease into two main divisions: (1) acute coronary insufficiency, which is a disproportion between the demands of the myocardium for oxygen and blood and the supply; it varies from the slight attack of angina pectoris to a severe one in which the ischemia is so prolonged or severe as to cause myocardial infarction; (2) acute coronary occlusion, which, on the other hand, we reserve for the classical attack of severe pain in the chest and in which fever, leukocytosis, blood pressure drop, pericardial rub, change in heart sounds, increased sedimentation rate are not only usually present but practically always more pronounced than in coronary insufficiency. The two can be differentiated by the electrocardiogram. We did not coin the term "acute coronary insufficiency." The pioneers abroad, particularly in Germany, and the early American workers used this term, and we felt that some recognition should be given their work. We have found the term "acute coronary insufficiency" helpful, and it has stood the test of time. The typical electrocardiographic findings in acute coronary insufficiency, which includes "coronary failure," consists of depressions of RS-T intervals and inversions of T waves. The authors showed a slide in which there was RS-T elevation in lead 3, but it is to be noted that this was an exceptional case, for myocardial infarction due to previous coronary occlusion had probably taken place as evidenced by a Q wave in lead 2 and a large Q wave in lead 3. Coronary disease need not be present in acute coronary insufficiency. In other words, in an attack of acute coronary insufficiency, or the authors' "coronary failure," the arteries may be perfectly normal.

DR. ROBERT L. LEVY, New York: The work of Drs. Blumgart and Schlesinger and their associates has contributed to our knowledge of the natural history of atherosclerosis of the coronary arteries. Their excellent studies with the injection-dissection technic have made clear the insidiously progressive character of the sclerotic process. They have shown how extensive the lesions may be in the absence of serious symptoms because of the gradual development of the pathologic changes and the parallel growth of a collateral circulation. The type of cardiac pain which has been described presents a nice problem in clinical diagnosis and judgment. But it does not deserve a special designation. Accurate terminology is not mere quibbling, for it promotes clear thinking and intelligent therapeutic procedure. Any disorder which interferes with the adequate flow of blood through the coronary bed causes coronary insufficiency. Coronary insufficiency is a functional disturbance in which the supply of oxygen to the myocardium is insufficient to meet the demands of the heart, in terms of work. It may be caused by a variety of factors which bring about this disproportion and result in cardiac ischemia. It manifests itself most frequently as pain, but may appear in a different form such as pulmonary edema or a cardiac arrhythmia, or even as sudden death. The correlation of symptoms and signs with anatomic changes makes possible the definition of certain distinctive syndromes. The picture which the authors have drawn appears to be that of coronary insufficiency due to partial or complete atherosclerotic closure of a coronary artery, not associated with thrombosis and not followed by the usual evidences of infarction. In some of their cases, to be sure, a slight transient rise in the leukocyte count and sedimentation rate suggested the possibility that minute areas of heart muscle had undergone necrosis. The relatively brief duration and reversible character of the disturbance were due to the presence of ample collaterals. It is logical to regard coronary atherosclerosis as a single pathologic process, appearing, in its various phases, as intimal thickening, subintimal hemorrhage, abscess formation, partial occlusion or complete closure. The occurrence of thrombosis is but one episode in the chain of events. The injury to the myocardium is manifested by infarction and fibrosis. Similarly,

there is a single functional disorder, coronary insufficiency, which likewise varies in its manifestations according to the nature and extent of the structural changes in the arteries and muscle of the heart. This concept is in accord with current knowledge and helps to simplify our understanding of a complex group of conditions. Studies such as this, which interpret the clinical features in terms of the pathologic lesions, aid in furnishing the basis for the rational management and effective treatment of patients.

DR. JOSEPH T. WEARN, Cleveland: Dr. Freedberg mentioned emotion as one of the causes precipitating these attacks. For years, I have been interested in the fact that excitement of various sorts tended to precipitate anginal attacks and attacks of coronary thrombosis. I found a newspaper clipping of a person's sitting in a poker game who held four aces. Before he was able to put his chips into the pot, he died of coronary occlusion. Since then, a number of persons have sent me clippings of sudden deaths of precipitated angina as the result of emotion or excitement. A recent one in my own experience will illustrate the effect of emotion. This patient was subject to anginal attacks and was driving along a street in Cleveland when a truck cut in front of him and dented his front mud guard. He decided what he was going to say to the truck driver, but as he drew up along side, he was seized with an attack of pain in the chest over his heart and had to slow down and pull up at the curb and allow the truck to pass on. Another instance was that of a wife and a husband playing bridge. The husband did not play the hand as his partner thought he should. As soon as the cards were thrown to the middle of the table, she started to tell him how he should have played it, but was seized with pain over the heart which was later shown to be due to coronary thrombosis.

DR. HERRMAN L. BLUMGART, Boston: Diagnostic classification, if it is to be significant, must be based on clinical and physiopathologic facts. Classification is justified only if it leads to more accurate diagnosis and to more accurate treatment. If these objectives are achieved, the precise choice of words is of relatively small moment. Our preference for the term coronary failure is due mainly to the fact that "coronary insufficiency" has been used by so many persons to designate so many syndromes, including angina pectoris, acute coronary occlusion, acute myocardial infarction and acute coronary thrombosis, that the term "coronary insufficiency" has ceased to have precise meaning. We have used the term "coronary failure," hoping to clarify the situation somewhat. If it were to be called "Syndrome X" or "Y" or "A," or if every one were to agree that this intermediate syndrome should be called "coronary insufficiency," we would concur. Our studies during the past decade were undertaken because clinical diagnoses no longer conformed to the facts disclosed by the improved methods of Dr. Schlesinger. The clinical classification of cardiac pain into three categories—that is to say, angina pectoris, coronary failure and acute myocardial infarction—has been the result of a detailed pathologic and clinical study of almost a thousand cases. The clinical criteria which have been set forth permit one to predict with high accuracy the actual pathologic findings within the heart disclosed post mortem. Not only is diagnosis more accurate but the regimens of treatment for each of these three categories are importantly different and distinctive. We would agree with Dr. Stroud and others in being conservative in treating patients with coronary failure. We agree that bed rest of perhaps ten days or two weeks may be indicated in some of these patients. Our studies, which have now been corroborated by others, have shown that narrowing of the coronary arteries stimulates the development of compensatory anastomotic circulation. In the presence of anastomotic circulation, a sudden narrowing or an acute, fresh occlusion, we believe, may occur occasionally without producing acute myocardial infarction. The experimental delineation of that situation has been reported previously in 1942, at the Association of American Physicians (*Tr. Am. Physicians* 57:152, 1942). There is no specific electrocardiogram of coronary failure. Even in angina, the attack may show elevation of the S-T segment rather than depression.

A NEW VEHICLE FOR PARENTERAL REPOSITORY PENICILLIN THERAPY

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The development of a simple and efficient method for maintaining and prolonging an effective plasma level of penicillin and for reducing thereby the number of intramuscular or subcutaneous injections necessary has been the subject of various investigations during the last few years. In all instances, it was attempted to slow the absorption of the penicillin from the site of injection by incorporating the antibiotic either into a mixture of wax and oil¹ or into water in oil emulsions² or into an oily vehicle³ or into complex vehicles containing vasoconstricting agents.⁴ The greatest success in this respect has been attained by the penicillin-wax-oil mixture of Romansky. However, the high melting point and the considerable viscosity of this preparation require special syringes, and the occasional occurrence of painful indurations and abscesses at the site of the injection is an undesirable complication.

An injectable preparation of penicillin, which can be handled at ordinary room temperature because of its fluidity at room temperature, not requiring special syringes for injection and which does not give rise to appreciable local untoward reactions, while possessing therapeutic properties equal or superior to the existing agents, would represent a distinct advance.

It is felt that the preparation to be discussed is a definite step in this direction.⁵ The observation that small doses of epinephrine suspended in oil exert a strong delaying effect led us to incorporate potassium penicillin into a vehicle of this composition.

The quantity of epinephrine added to the oil was kept sufficiently low to assure a prolonged local vasoconstrictor action without causing any systemic vasoconstrictor effect. Extensive experimentation with this preparation on animals as well as observations in man showed that the considerable slowing of the absorption of the penicillin from its intramuscular or subcutaneous depot into the general circulation was not essentially due to the oily character of the vehicle, as a prominent delaying action was caused by the prolonged ischemic effect of the epinephrine gradually released from its oily base. The following composition was found generally to be the most useful and efficacious one: crystal-

line potassium penicillin, 300,000 units; epinephrine, 0.3 mg., and vegetable oil, 1 cc.

The following experimental data on man and dogs demonstrate the pharmacologic properties of this preparation and indicate its presumptive therapeutic effectiveness.

EXPERIMENTAL PROCEDURE

Technical Data.—The preparation used was available in ampules containing 1 cc. of oily medium for the 200,000 and 300,000 units of crystalline potassium penicillin doses and 2 cc. for the 400,000 and 600,000 unit doses. After brief shaking of the ampule for resuspending the sedimented penicillin, the preparation was drawn into an ordinary syringe (2 or 5 cc.) through a 20 or 21 gage needle. It was injected into the muscle of the buttocks without any difficulty. Blood for the determination of the penicillin level was removed at varying intervals from the jugular vein of the dogs and from the cubital vein of man. The serial dilution method of Rammelkamp⁶ was employed for the bioassay of the serum, cultures of *Streptococcus hemolyticus*, type A, group 3, being used as the test organism.

Experiments on Dogs: Mongrel dogs weighing from 7 to 15 Kg. (average around 10 Kg.) were given intra-

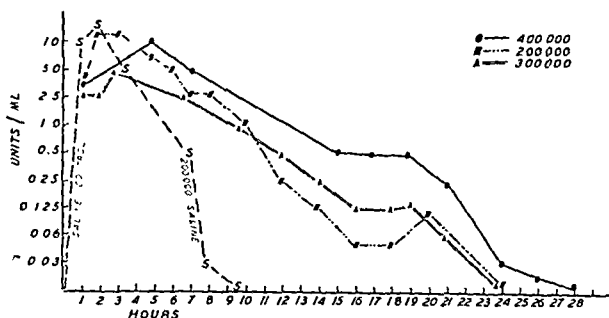


Chart 1.—Average penicillin serum levels following intramuscular injection of "intracillin" in dogs.

muscular injections with the penicillin-epinephrine-oil preparation ("intracillin" Warner) containing 200,000, 300,000 and 400,000 units of penicillin, respectively, and epinephrine in quantities varying from 0.1 to 0.4 mg. per dose. For purposes of control, similar amounts of penicillin were administered in isotonic sodium chloride solution and suspended in oil. A commercial calcium penicillin-beeswax-oil preparation also was given for comparative purposes. Chart 1 illustrates the results obtained as to the height and duration of demonstrable blood penicillin level and averaged for the various groups composed of a total of 66 dogs.

Although there occurred distinct variations of the blood penicillin responses among the individual animals to the same type of preparation, it is obvious that there was a considerable prolongation of the demonstrable penicillin blood level in all animals which received the penicillin-epinephrine-oil preparation over those which were given corresponding doses of penicillin in isotonic sodium chloride solution or penicillin in oil.

Experiments in Man: A. Intramuscular administration. The experiments on man were conducted on an ambulatory basis on normal volunteers. The general procedure observed was identical with that used in the dog experiments. The various agents were injected

From the Division of Pharmacology and Chemotherapy, Warner Institute for Therapeutic Research, and the Medical Department, William R. Warner & Co., Inc.

1. Romansky, M. J., and Rittman, G. E.: Method of Prolonging Action of Penicillin, *Science* **100**:196, 1944. Romansky, M. J.: The Current Status of Calcium Penicillin in Beeswax and Peanut Oil, *Am. J. Med.* **1**:395, 1946.

2. Freund, J., and Thomson, K. J.: Simple, Rapid Technique of Preparing Water-in-Oil Emulsions of Penicillin, *Drugs and Biologics, Science* **101**:468, 1945. Cohn, A.; Kornblith, B. A.; Grunstein, I.; Freund, J., and Thomson, K. J.: Treatment of Gonorrhea with Penicillin, *J. Ven. Dis. Inform.* **27**:154, 1946. Harris, H. W.; Wilcox, C., and Finland, M.: Plasma Levels After Repository Injections of Penicillin in Water-in-Oil Emulsions, *Proc. Soc. Exper. Biol. & Med.* **63**:199, 1946. Ory, E. M.; Wilcox, C., and Finland, M.: Serum Levels After Repository Injections of Penicillin, *ibid.* **62**:86, 1946.

3. Cannon, A. B.; Lindstrom, K., and Ospeck, A. B.: Maintenance of Penicillin Blood Levels After a Single Intramuscular Injection of Penicillin in Various Oils, *Science* **104**:414, 1946.

4. Senger, F. L.; Warren, H. L., and Rifkin, I.: Penicillin in Propylene Glycol, *J. Urol.* **55**:138, 1946. Doll, E. R., and Dimrock, W. W.: Efficacy of Various Agents for Delaying Absorption of Penicillin, *J. Am. Vet. M. A.* **108**:310, 1946.

5. A number of other liquid repository preparations ("procaine penicillin," "liquid Romansky") with prolonged action have appeared on the market since the submittal of this paper for publication.

6. Rammelkamp, C. H.: Method for Determining Concentration of Penicillin in Body Fluids and Exudate, *Proc. Soc. Exper. Biol. & Med.* **51**:95, 1942.

into the muscular tissue of the buttocks. The number of subjects given injections and the doses used are listed in table 1.

The blood pressure of these men was determined directly before the injections were made, and at varying intervals thereafter, ranging from thirty minutes to thirty-one hours.

TABLE 1.—Number of Subjects Given Injections and the Doses Used

Number of Men		Vehicle	Epinephrine	Potassium Penicillin, Units
Intramuscular Injection	Subcutaneous Injection			
12	11	Oil	0.5-0.6 mg.	600,000
10	..	Oil	0.2-0.4 mg.	400,000
14	6	Oil	0.25-0.33 mg.	300,000-330,000
..	5	Oil	1.0 mg.	300,000
10	..	Oil	0.1/-0.2/ mg.	200,000
5	17	Oil	0.15-0.3 mg.	150,000
7	..	Isotonic NaCl	.....	200,000-330,000
6	..	Isotonic NaCl	.....	400,000-600,000
6	..	Beeswax-oil	.....	300,000*

* Calcium penicillin.

The height and duration of the blood penicillin level following these medications are presented in chart 2 as averaged values for the individual groups, while the blood pressure measurements are shown in table 2.

TABLE 2.—Blood Pressure Measurements of Volunteers Treated with "Intracillin"

Patient	Treatment			Blood Pressure											
	Epi-neph-rine	Dose, Cc.	Penicillin, Units	Hours After Injection											
				½	¾	1	2	2½	6	6½	10	11	17	21	
N. E.	0.4	2.0	400,000	122/88	.....	.....	128/82	.....	126/82	.....	.....	.....	128/86	132/90	
R. F. S.	0.1	1.0	200,000	125/85	.....	.....	120/85	.....	122/76	.....	.....	.....	110/82	116/80	
G. L.	0.2	2.0	400,000	122/72	.....	.....	112/70	.....	130/86	.....	.....	.....	120/82	118/68	
M. N.	0.8	2.0	400,000	155/78	.....	.....	126/82	148/80	140/88	.....	.....	150/90	.....	.....	
R. P.	0.33	1.1	330,000	125/78	.....	.....	128/80	128/84	122/78	.....	.....	125/78	.....	.....	
W. M.	0.2	1.0	200,000	130/82	.....	.....	138/75	138/70	138/75	.....	.....	118/72	.....	.....	
A. A.	0.8	2.0	400,000	124/70	.....	.....	120/72	124/76	108/70	.....	.....	126/26	.....	.....	
F. C.	0.4	2.0	400,000	115/62	.....	.....	118/70	.....	138/86	115/65	.....	105/65	.....	.....	
W. P.	0.4	2.0	400,000	148/80	.....	120/70	.....	.....	150/68	.....	148/60	156/68	.....	.....	
H. K. K.	0.2	2.0	400,000	118/64	.....	118/74	.....	.....	138/80	118/68	.....	140/86	.....	.....	
L. C.	0.33	1.1	330,000	120/70	.....	106/60	.....	.....	142/68	136/76	.....	142/76	.....	.....	
D. J. L. V.	0.33	1.1	330,000	122/70	.....	116/78	.....	.....	136/85	132/80	.....	130/72	.....	.....	
E. R.	0.33	1.1	330,000	130/78	.....	125/80	.....	.....	140/88	135/80	.....	124/88	.....	.....	
L. V.	0.6	2.0	600,000	165/110	.....	148/110	.....	.....	178/108	156/112	.....	158/102	.....	.....	
F. M.	0.6	2.0	600,000	136/86	.....	120/92	.....	.....	135/82	140/86	.....	126/88	.....	.....	
W. M.	0.2	1.0	200,000	130/82	.....	130/70	.....	.....	114/70	.....	130/72	.....	.....	.....	
S. K.	0.2	1.0	200,000	112/78	.....	124/72	.....	.....	130/65	.....	118/70	.....	.....	.....	
A. G.	0.33	1.1	330,000	130/95	116/100	.....	.....	.....	130/98	.....	.....	130/100	.....	.....	
C. N.	0.25	0.85	255,000	114/78	124/80	.....	.....	118/72	.....	.....	.....	128/80	.....	.....	
C. P.	0.51	1.7	510,000	132/82	.....	130/86	.....	.....	140/76	.....	.....	.....	.....	.....	
E. S.	0.57	1.9	570,000	150/78	.....	150/78	.....	.....	156/86	.....	.....	.....	.....	.....	
B. A.	0.3	1.0	300,000	122/76	.....	122/76	.....	.....	115/72	.....	.....	.....	.....	.....	
N. M.	0.3	1.0	300,000	165/76	.....	166/78	.....	.....	122/65	.....	.....	.....	.....	.....	
M. N.	0.2	1.0	200,000	128/60	.....	132/65	.....	.....	153/40	.....	.....	.....	.....	.....	
L. L.	0.2	1.0	200,000	156/112	.....	145/100	.....	.....	135/98	.....	.....	.....	.....	.....	

The data contained in table 2 demonstrate that there was not in any case a significant increase of blood pressure which could be attributed to the vasoconstrictor substance injected. This is particularly noteworthy in regard to those subjects who showed an original systolic blood pressure of 150 mm. of mercury or over, although in several subjects "intracillin" containing doses of epinephrine much higher than those present in the commercial preparation ultimately adopted (0.3 mg.) was used. Pharmacologic experiments on cats⁷ confirmed the lack of a systemic vasopressor effect of

epinephrine in oil given intramuscularly in doses six times higher than those present in "intracillin."

The evidence presented in chart 2 demonstrates that in man also the epinephrine in oil vehicle caused a considerable prolongation of the demonstrable blood

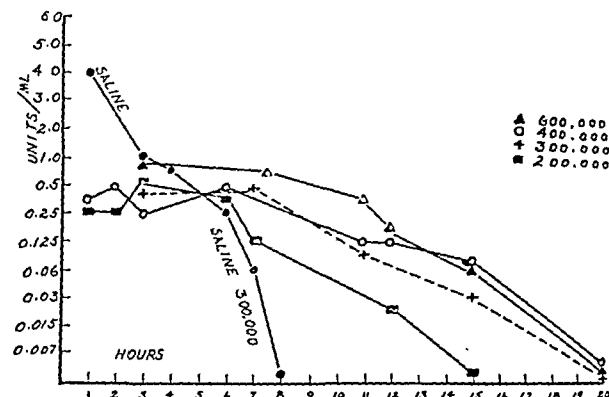


Chart 2.—Average penicillin serum levels following intramuscular administration of "intracillin" in man.

penicillin level. With doses of 300,000, 400,000 and 600,000 units of potassium penicillin, there existed a demonstrable blood penicillin level well beyond the fifteen hour mark (in contrast to the seven hour range when 300,000 units of potassium penicillin was given

intramuscularly in isotonic sodium chloride solution), while doses of 200,000 units produced a demonstrable blood penicillin level for more than twelve hours.

B. Subcutaneous administration. In view of the fact that the degree of vascularity of the subcutaneous tissue is lower than that of the muscular tissue and considering that depots located in the subcutaneous tissue are less subject to the massaging action exerted by contracting muscle tissue than those situated in the muscle tissue proper, 39 patients with gonorrhea were given subcutaneous injections of "intracillin" containing 150,000, 300,000 and 600,000 units of potassium penicillin, respectively. (This investigation was done in

7. Ercoli, N.; Hueper, W. C.; Schachter, R. J.; Schwartz, B. S., and Whitehead, M.: To be published.

cooperation with Drs. A. Cohn and B. Kornblith.) The values of the penicillin blood levels are presented in chart 3.

The duration of the demonstrable blood penicillin values at a relatively high level for a period of practically twenty-four hours is a feature of this route of administration of "intracillin" with doses of 600,000 units of potassium penicillin. Particularly noteworthy is the fact that even with doses as low as 150,000 units there was in an appreciable number of cases a demonstrable blood penicillin level fifteen hours after the injection.

Since the results reported here have been obtained on unanesthetized animals and ambulatory patients, who subject their tissue depots of penicillin to an appreciable amount of natural massage accelerating the rate of absorption, it is likely that in hospitalized patients, kept in bed during the course of the penicillin treatment, there may be a definite additional prolongation of the period during which demonstrable penicillin levels may be found in the blood.

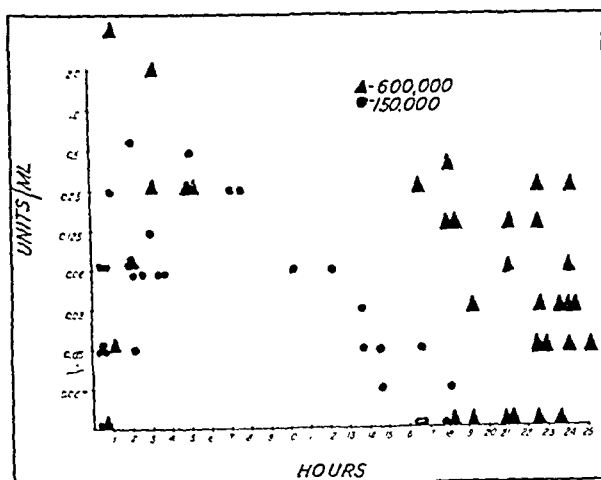


Chart 3.—Penicillin serum levels following subcutaneous administration of "intracillin" in man.

CONCLUSIONS

The evidence presented supports the claim that the penicillin - epinephrine - oil preparation ("intracillin") besides being easily handled with syringes and needles ordinarily available, produces after intramuscular and, particularly, after subcutaneous injection an effective and demonstrable blood penicillin level for periods covering sixteen to twenty-four hours when administered with a penicillin content of 300,000 units of potassium penicillin.

ADDENDUM

A clinical study in the treatment of gonorrhea conducted by Drs. Alfred Cohn and B. A. Kornblith, of the Department of Health, City of New York, confirmed the therapeutic advantages of this penicillin preparation.⁸

These authors found that one single injection of ½ cc. of a preparation containing 150,000 units of penicillin and 0.15 mg. epinephrine cured 97 out of 100 male patients with gonorrhea. The 3 patients who did not respond to the initial injection were promptly cured with a second injection of an identical dose (½ cc. "intracillin").

⁸S. Cohn, A., and Kornblith, B. A.: Single Injection Treatment of Gonorrhea with Potassium Penicillin Suspension in Oil Containing Epinephrine, *Am. J. M. Sc.*, to be published.

AUREOMYCIN

Experimental and Clinical Investigations

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Aureomycin is an antibiotic derived from a strain of *Streptomyces aureofaciens*. It is supplied as a yellow crystalline hydrochloride salt which is soluble in distilled water but somewhat less soluble in isotonic sodium chloride solutions. These solutions are acid (pH 4.5). The activity of the antibiotic deteriorates rapidly in alkaline solution at room temperature.

IN VITRO STUDIES

Aureomycin has been shown to possess antibacterial activity against numerous gram-positive and gram-negative bacteria. Beta hemolytic streptococcal strains, groups A, D, F and G, and three strains of *Streptococcus faecalis* were susceptible to the effects of 0.3 to 1.25 micrograms of aureomycin per milliliter; *Diplococcus pneumoniae* types I, II and III were susceptible to 0.1 to 0.3 microgram, staphylococci to 0.6 microgram per milliliter, strains of *Bacillus coli aerogenes* to 5.0 micrograms per milliliter; *Klebsiella pneumoniae* to 1.0 to 5.0 micrograms per milliliter, *Hemophilus influenzae* to 2.0 micrograms per milliliter, and *Brucella suis* and *abortus*¹ to 0.75 microgram per milliliter, while *Pseudomonas aeruginosa* and strains of *Proteus* were not inhibited by 20.0 micrograms per milliliter. The antibiotic appeared to be bacteriostatic rather than bactericidal except in high drug concentration. Human serum seemed to have an inhibiting effect on the antibiotic's activity, and to obtain an inhibitory concentration in the presence of 50 per cent serum about fifty times the concentration was necessary as compared with that in broth.

IN VIVO STUDIES

The acute toxicity of aureomycin was determined in mice, rats, rabbits and dogs. All mice survived a single intravenous injection of 50 mg. per kilogram of body weight. Fourteen per cent survived 100 mg. per kilogram of body weight. Seventy-seven per cent of mice receiving 3,000 mg. per kilogram of body weight in a single subcutaneous dose survived a seven day observation period. All the animals died when 4,000 mg. per kilogram of body weight was administered. Death was preceded by hyperpnea, tremors, ataxia and paresis. Areas of necrosis were noted at the local site of injection.

Hyperpnea and anorexia developed in dogs following rapid intravenous injection of 50 and 100 mg. per kilogram of body weight. Injection of 150 mg. per kilogram of body weight was followed by grunting respiration, tremors, generalized paresis, somnolence and hemoglobinuria. Death occurred six hours after the injection was given. A dog which received 20 mg.

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Aureomycin was first described by Dr. B. M. Duggar, Lederle Laboratories Division, American Cyanamid Company.

Aureomycin used in these experiments was supplied by the Lederle Laboratories Division, American Cyanamid Company.

This paper is an abstract of reports made before the Section on Biology, New York Academy of Sciences, July 21, 1948.

These investigations were supported by grants from Abbott Laboratories, Eli Lilly and Company, Lederle Laboratories Division, Parke, Davis & Company and the Upjohn Company.

1. All *Brucella* cultures were performed by Mr. Ronald M. Wood of the Laboratories of the Wilmer Ophthalmological Institute, Johns Hopkins Hospital.

per kilogram of body weight intramuscularly twice a day for nine days had decided anorexia and loss of weight. Induration, necrosis and fluctuation of the injected areas were noted. The aureomycin was administered in 1 per cent procaine hydrochloride solution.

Rats tolerated subcutaneous injections of 50 mg. per kilogram of body weight once a day for eight days, with only a slight loss of weight and mild local inflammatory reaction.

Three drops of a solution of 0.25 per cent and 1.0 per cent aureomycin borate were instilled locally into the conjunctival sac of a rabbit. No immediate or delayed reactions were noted.

At autopsy no gross or microscopic abnormalities were noted in any of the animals except for necrosis of tissue at the local site of injection. Hemoglobinuria occurred in only 1 dog which received 150 mg. per kilogram of body weight intravenously in a 10 per cent solution in distilled water. The acidity of such a large dose may well have caused hemolysis.

CONCENTRATIONS OF AUREOMYCIN IN BODY FLUIDS

The following concentrations of the antibiotic in blood serum were obtained after single intramuscular injections of 20 mg. per kilogram of body weight in rabbits and 40 mg. per kilogram of body weight in dogs. Levels of 1.25 mg. per milliliter were recorded in the serum in from fifteen minutes to one hour following the injections. No significant concentrations were obtained in the serum more than one hour after the injection was given. A dog received 20 mg. per kilogram of body weight twice a day for ten days. No significant concentrations were detected in the serum obtained more than two and five-tenths hours after the last injection was given. Serums drawn one hour after the injection was administered contained 0.3 to 1.25 micrograms of aureomycin per milliliter. The antibiotic was not detected in the spinal fluid, but high levels were observed in the urine.

When aureomycin was administered orally to a 150 pound (about 68 Kg.) man in doses of 500 mg. twice a day and 40 mg. intramuscularly every six hours, blood levels of 0.6 to 2.4 micrograms per milliliter of serum were observed one hour after an injection was given. The antibiotic produced a greenish yellow discoloration of the urine, in which concentrations of 40 to 80 micrograms per milliliter were observed.

MOUSE PROTECTION

Mice infected intraperitoneally with 10,000 lethal doses of *D. pneumoniae* type I (SVI), and *Streptococcus hemolyticus* beta (C23) showed complete clearing of the infection in the blood stream eighteen hours after subcutaneous treatment with 5 mg. of aureomycin per kilogram of body weight three times daily. When *K. pneumoniae* type A was the infecting organism, only partial sterilization of the blood stream was obtained with a dosage schedule of 10 mg. per kilogram of body weight three times daily.

The protection of mice infected with 1,000 lethal doses of *K. pneumoniae* A, *D. pneumoniae* I (SVI) and *S. hemolyticus* beta (C203) and treated with aureomycin, administered by various routes, was studied. Communal feeding was begun two days before infection and continued for five days thereafter, so that a daily dose of approximately 50 mg. per kilogram of body weight was ingested. No survivors were observed at the end of seven days except among those mice infected with *S. hemolyticus* beta (C203), in which a 70 per

cent protection was noted. Gastric intubation begun immediately after infection and continued once each day for three days protected only those mice infected with *S. hemolyticus* beta (90 per cent survivors). A single subcutaneous injection of 50 mg. per kilogram of body weight administered immediately after infection protected 30 per cent of mice infected with pneumococcus type I, 50 to 70 per cent of those infected with *S. hemolyticus* beta and 40 per cent of mice infected with *K. pneumoniae* type A. One hundred mg. per kilogram of body weight administered subcutaneously protected all mice infected with pneumococcus type I and 80 per cent of those infected with *K. pneumoniae* type A. The intraperitoneal route for administration of aureomycin was somewhat more effective than the subcutaneous route, even though treatment was instituted two hours after infection. Parallel experiments were performed in mice, employing treatment with penicillin as a control for the infections produced with the gram-positive organisms. Treatment with streptomycin and polymyxin was used as control for the infections produced by *K. pneumoniae* type A. Aureomycin when compared on the basis of mg. per kilogram of body weight dosage was as effective as penicillin when pneumococcus type I was the infecting organism. The protection achieved in infections produced by *S. hemolyticus* beta was somewhat inferior to that when penicillin was used. When all routes of administration were compared, the protection of mice infected with *K. pneumoniae* type A, and treated with aureomycin, was definitely less than that observed with polymyxin or streptomycin.

TREATMENT OF PATIENTS

Patients suffering from coli-aerogenes and *S. faecalis* infections of the urinary tract, Rocky Mountain fever (Eastern type), typhoid and brucellosis have been treated with aureomycin, which was administered orally and/or intramuscularly. The oral dosage employed varied from 10 to 60 mg. per kilogram of body weight per day, given in six to twelve doses. Intramuscularly, a total dosage of 3 mg. per kilogram of body weight per day, divided into four doses, was tolerated, but with signs of moderate local irritation. The 5 patients with Rocky Mountain spotted fever, treated on the third to the fifth day of their disease, were afebrile and asymptomatic within twelve to seventy-two hours. A patient ill with chronic brucellosis, whose blood cultures were repeatedly positive for *Br. suis*, became afebrile three days after institution of aureomycin therapy. Blood cultures became sterile forty-eight hours after treatment was begun. As of the date of reporting, these had remained sterile and the patient had remained afebrile and asymptomatic for more than two months. Infections of the urinary tract due to coli-aerogenes and *S. faecalis* have been sterilized and evidence of inflammation has disappeared when patients were treated with aureomycin by mouth.

SUMMARY AND CONCLUSIONS

Aureomycin possesses bacteriostatic and bactericidal activity against numerous gram-positive and gram-negative bacteria.

Its activity deteriorates rapidly in alkaline solution. Human serum also decreases its activity.

The LD₅₀ on intravenous injection in mice is between 50 and 100 mg. per kilogram of body weight. The LD₅₀ on subcutaneous injection in mice is between 3,000 and 4,000 mg. per kilogram of body weight. Rapid intravenous injection of 150 mg. per kilogram of body weight killed a dog and produced hemoglobinuria.

Repeated large doses of aureomycin were tolerated in rats and dogs, with moderate local reaction and some loss of weight associated with anorexia. Autopsy revealed no gross or microscopic abnormality of the viscera.

A rabbit tolerated 1 per cent aureomycin borate administered locally in the eye.

The concentrations of the antibiotic in serum ranged from 0.3 to 2.4 micrograms per milliliter. The antibiotic was not detected in the spinal fluid. High concentrations of aureomycin were noted in the urine.

Aureomycin administered to mice orally did not protect against infections produced by pneumococcus type I or *Klebsiella pneumoniae* type A, but did protect against those produced by *Streptococcus hemolyticus* beta (C203). Parenteral doses gave some protection against all three infections. Penicillin afforded slightly more protection against infections produced by gram-positive bacteria, while polymyxin and streptomycin were superior in experimental infections produced by *K. pneumoniae*.

Five patients suffering from Rocky Mountain spotted fever, 2 patients with infections of the urinary tract due to *Escherichia coli*, 1 patient with brucellosis and 2 patients with typhoid were treated, with favorable initial responses.

OCCURRENCE OF SUPERINFECTIONS DURING ANTIBIOTIC THERAPY

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and

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It has been frequently observed that during the course of treatment with an antibiotic a complete change in the bacterial flora may occur. In these circumstances the pathogens sensitive to the antibiotic in use disappear or become less numerous and insensitive organisms may appear in large numbers and cause a new infection. For example, when using penicillin for an infection caused by a gram-positive organism one may encounter a secondary infection caused by a gram-negative bacillus. The reverse may obtain when one uses streptomycin.

Lipman, Coss and Boots¹ described changes in the bacterial flora of the throat and intestinal tract during prolonged oral administration of penicillin. In two recent papers Weinstein² discussed the subject of new infections developing during the course of specific antibiotic therapy and reported 5 illustrative cases. Stanley³ reported a series of 5 cases in which a severe systemic infection due to *Bacillus pyocyaneus* developed during a course of treatment with penicillin and further suggested that the use of this antibiotic may have enhanced the virulence of *B. pyocyaneus*. In several papers on penicillin therapy in bronchopulmonary disease there are references to the frequent appearance of gram-negative bacilli in the sputum, but little comment in regard to the significance of this development. It is the purpose of this paper to record 2 cases of pneumococcal pneumonia treated with penicillin in which

there developed a new infection due to gram-negative bacilli and also to stress the occurrence of superinfections as an important feature of antibiotic therapy.

REPORT OF CASES

CASE 1. History.—R. C., a man aged 45, was admitted to Bellevue Hospital on Nov. 8, 1946, with the complaints of dyspnea, productive cough and tightness of the chest of three weeks' duration. The sputum was greenish but not foul. In addition, he had swelling of the legs, weakness, anorexia and loss of weight of about 10 pounds (about 4.5 Kg.).

Physical Examination.—On admission the patient was acutely ill, pale and malnourished and coughed continuously. The temperature was 103.6 F., the pulse rate 120 and the respirations 28. There was moderate cyanosis and dyspnea. The left side of the thorax showed limitation of expansion. There was dullness, modified breath sounds and fine crackling rales over the lower third of the upper lobe of the right lung and diminished fremitus and rales over the lower two thirds of the left lung. The heart was not enlarged, but had a systolic murmur at the apex. The blood pressure was 120 systolic and 40 diastolic. The abdomen was soft. There was pitting edema of both legs. There were no other striking observations. A diagnosis of pneumonia was made.

Laboratory Examination.—The red blood cell count was 2,820,000, with 7.5 Gm. hemoglobin, and the white blood cell count was 6,550, with 61 per cent polymorphonuclear cells and 39 per cent lymphocytes. The urine was essentially normal. The sputum was copious and purulent, but not foul, and showed a predominance of pneumococci II and also some staphylococci and nonhemolytic streptococci. The blood culture was positive for pneumococci II. Fluoroscopy showed an homogeneous density throughout the lower two thirds of the left lung and areas of patchy infiltration in the lower third of the upper lobe of the right lung.

Treatment and Course.—On admission the patient received 4 Gm. of sulfadiazine and then 1 Gm. every four hours. When the temperature rose to 104 F., on the second day, penicillin therapy was instituted. The patient received 40,000 units and later 50,000 units intramuscularly every three hours. On the fourth day the patient appeared toxic and showed an extension

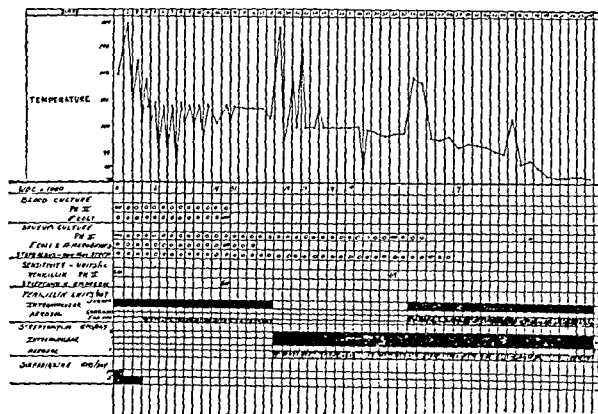


Fig. 1.—Summary of data in case 1.

of the pneumonic process in the left lung and also showed evidence of involvement of the middle lobe of the right lung. Since the presence of fluid at the base of the left lung was suspected, an exploratory thoracentesis was done. This yielded 3 cc. of thick rusty pus, which showed on culture the presence of pneumococci II. The impression was that the aspirated material was from the lung parenchyma.

When it was shown that the isolated pneumococcus had a penicillin sensitivity of 0.01 unit per cubic centimeter, the sulfadiazine therapy was stopped and penicillin alone was used. In addition to the systemic administration of penicillin, the drug was also given by aerosol, 50,000 units ten times a day. Following the course of penicillin therapy the patient improved somewhat, and pneumococci II disappeared from the blood and

Dr. Jack Nelson and Dr. Joel J. Brenner assisted in the study of the cases.

From the Fourth Medical (New York University) Division, Bellevue Hospital, Dr. Charles H. Nammack, Director.

1. Lipman, M. O., Coss, J. A., and Boots, R. H.: Changes in Bacterial Flora of the Throat and Intestinal Tract During Prolonged Oral Administration of Penicillin, *J. Bact.* 51: 594, 1946.

2. (a) Weinstein, L.: The Treatment of Meningitis Due to Haemophilus Influenzae with Streptomycin, *New England J. Med.* 235: 101, 1946; (b) The Spontaneous Occurrence of New Bacterial Infections During the Course of Treatment with Streptomycin or Penicillin, *Am. J. M. Sc.* 214: 56, 1947.

3. Stanley, M. M.: *Bacillus Pyocyaneus* Infections, *Am. J. Med.* 2: 253 and 347, 1947.

sputum. However, a sputum culture taken on the thirteenth day revealed the presence of gram-negative bacilli, identified as *Aerobacter aerogenes* and *Escherichia coli*. At the same time the blood culture was positive for *E. coli*.

On the eighteenth day the temperature rose to 104 F., and the patient became toxic and appeared close to death, with decided dyspnea and cyanosis. Streptomycin therapy was then instituted, the patient receiving daily 2 Gm. intramuscularly and 1 Gm. by aerosol. On the twenty-third day his temperature began to drop, accompanied with general clinical improvement. It should be noted, however, that the isolated gram-negative bacillus showed a streptomycin sensitivity of 500 units per cubic centimeter.

Improvement continued until the thirty-fourth day, when the patient became toxic again and the temperature rose to 102 F. The sputum, which had diminished in quantity, now revealed pneumococci II again, but not the gram-negative bacillus. Penicillin was therefore given in addition to the streptomycin, the patient receiving 500,000 units intramuscularly daily and 1,000,000 units by aerosol. There was a prompt response to this treatment. The temperature dropped to 100 F. during the next two days and then returned slowly to normal. This was associated with general clinical improvement, a sense of well-being and gain in weight. In spite of fairly extensive residual pulmonary fibrosis, there was only slight impairment of respiratory function. The patient was in good condition at the time of his discharge on May 1, 1947.

CASE 2.—History.—E. E., an man aged 44, was admitted to Bellevue Hospital on Feb. 21, 1947, with the complaints of chilly sensation, fever, pain in the right side of the chest, cough and dyspnea of one day's duration.

Physical Examination.—On admission the patient was acutely ill, apprehensive and dyspneic. The temperature was 102 F., the pulse rate 110 and the respiration 32. The blood pressure

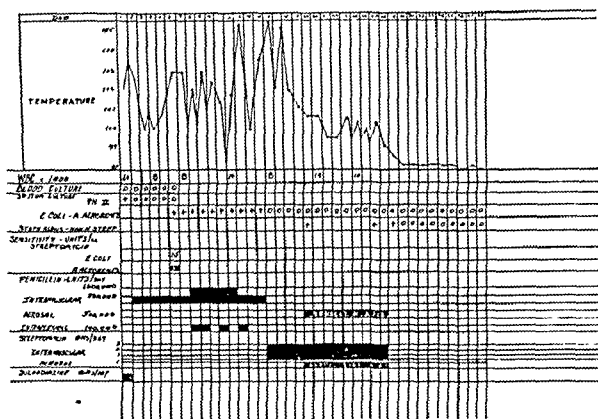


Fig. 2.—Summary of data in case 2.

was 110 systolic and 60 diastolic. There were dullness and bronchovesicular breath sounds over the lower part of the right lung posteriorly and in the axilla. The heart presented no abnormalities, and the results of the rest of the examination were essentially negative.

Laboratory Examination.—The white blood cell count was 26,000, with 91 per cent polymorphonuclear leukocytes. The sputum revealed a predominance of pneumococci II, together with an occasional *Streptococcus viridans* and *Staphylococcus albus*. The roentgenogram of the chest showed a pneumonic consolidation of the middle lobe of the right lung. The blood culture was sterile.

Treatment and Course.—On admission the patient received 4 Gm. of sulfadiazine and then 1 Gm. every four hours. The following day the patient appeared moribund, being semistuporous and extremely dyspneic and cyanotic. In addition to the pneumonia there were signs of severe congestive heart failure and auricular fibrillation. The patient was therefore given stimulants, first 0.75 mg. of ouabain and then digitoxin. At the same time penicillin was substituted for sulfadiazine, the patient receiving 50,000 units every three hours. He was also placed

in an oxygen tent. There was a satisfactory clinical response, with improvement of the heart failure and reduction in the fever.

On the seventh day the temperature rose to 103 F., and there were signs of fluid at the base of the right lung. The sputum now showed untyped pneumococci, staphylococci and gram-negative bacilli.

On the eighth day a thoracentesis yielded 900 cc. of sero-sanguinous fluid which showed gram-positive diplococci that did not type with pneumococcus II serum. One hundred thousand units of penicillin were injected intrapleurally. At the same time the intramuscular dose was increased to 200,000 units every three hours. From the eighth to the twenty-first day the patient had a septic temperature. Roentgenograms taken on the fourteenth day showed two fluid pockets. The aspirations of the chest were repeated and were followed by the intrapleural instillation of penicillin, resulting in sterilization of the empyema pockets.

On the eleventh day, the gram-positive cocci in the sputum culture were overgrown by the gram-negative bacilli, and on the fourteenth day there were only gram-negative bacilli, identified as *E. coli* and *A. aerogenes*. The *E. coli* was sensitive to 1.53 and the *A. aerogenes* to 0.38 unit per cubic centimeter of streptomycin.

Since there was no improvement and in view of the presence of the gram-negative bacilli, the penicillin therapy was stopped and streptomycin therapy was begun on the sixteenth day, with a daily intramuscular dose of 3 Gm. At that time it was thought that the pulmonary parenchyma was breaking down, resulting in the expectoration of large amounts of thick yellow nonfoul sputum.

On the twentieth day the sputum culture failed to show the gram-negative bacilli and again showed gram-positive cocci. Accordingly, combined penicillin and streptomycin aerosol therapy was instituted, 50,000 units of each, for eight treatments daily. This resulted in prompt and progressive improvement. There was a drop in temperature and diminution in the expectoration. The patient's convalescence was uneventful and his recovery complete.

COMMENT

In these 2 cases of pneumococcal pneumonia there developed during the course of penicillin therapy new infections due to organisms not susceptible to this antibiotic. Summaries of the data in these 2 cases are shown in figures 1 and 2. In case 1 a course of penicillin therapy resulted in clinical improvement, with the disappearance of the pneumococci from the blood and sputum. This was followed by the emergence of gram-negative bacilli, identified as *E. coli* and *A. aerogenes*, and the simultaneous aggravation of the clinical picture, requiring the use of streptomycin. The pneumonia in case 2 was complicated by congestive heart failure and empyema. After the administration of penicillin intramuscularly and intrapleurally the gram-positive organisms disappeared from the sputum and pleural fluid. However, there occurred a new infection due to *E. coli* and *A. aerogenes*. The institution of streptomycin therapy led to clinical improvement and the disappearance of the gram-negative pathogens. It may be of interest to note that in both cases during the administration of streptomycin the gram-positive cocci returned, necessitating supplementation with penicillin.

As Weinstein^{2a} has pointed out, the mechanism by which the new infection occurs is not clear, but may be due to a disturbance in the degree of bacterial antagonism, which is normally present. It is possible that the removal of bacteria with a specific antibiotic causes insensitive organisms to increase not only in number but also in virulence.

The occurrence of superinfections in patients receiving penicillin or streptomycin serves to emphasize the importance of frequent and careful bacteriologic examinations before and during the course of treatment. The highly specific qualities of antibiotic agents neces-

sitate the accurate identification of causative organisms whenever they arise.

It has been suggested that the combined use of penicillin and streptomycin may prevent the occurrence of superinfections. Since the incidence of new infections does not appear to be high, the routine use of combined therapy is, to our minds, unwarranted. There is also an objection that treatment with both drugs may sensitize certain patients to their use later in life. It therefore seems best to watch for new infections and to use each antibiotic in a specific manner, depending on the precise bacteriologic observations at a given stage of the disease.

SUMMARY AND CONCLUSIONS

Two cases of pneumococcic pneumonia, in which following penicillin therapy there developed a new infection due to gram-negative bacilli, are described.

We have stressed the importance of frequent and careful bacteriologic examinations in all patients before and during treatment with an antibiotic, in order to detect the presence of superinfections.

The treatment of infections from the start with a combination of penicillin and streptomycin is not advisable.

PREGNANCY TEST USING THE MALE BATRACHIA

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In March 1947 I¹ published the first results of a new biologic pregnancy test, in which male toads, "*Bufo arenarum* Hensel," were used as the reacting animals.

One year has elapsed since the first experiments were made, in January 1947, and it is believed useful and desirable to summarize the information obtained since then from the accumulated statistics and the many papers published on the subject.

The basis of this reaction is the phenomenon which occurs in the testicle of the adult male toad as a direct result of gonadotropic stimulation. The positivity or negativity of the reaction to the test is produced by the presence or absence of spermatozoa in a drop of toad's urine, collected by means of a pipet and observed microscopically within a few hours following the subcutaneous injection of 10 cc. of urine from the woman suspected to be pregnant.

ANATOMIC AND PHYSIOLOGIC CONSIDERATIONS

The testicle is a dual organ, of elongated form, located in the dorsal region of the celomic cavity, parallel to the spine and united by means of a short ligament to the corresponding kidney.

The general structure is similar to that of the testicles of superior animals. It has seminiferous ampules or tubes, interstitial cells and supporting tissue.

Collecting tubes depart from the seminiferous ampules, go through the ligament, get into the kidney and end in certain glomeruli.

This anatomic distribution indicates that the routes of excretion, starting from the kidney, are common to the spermatozoa and to the urine.

The spermatogenesis of the *Bufo arenarum* Hensel develops in round cellular conglomerates, called sper-

matocytes or follicles. The spermatozoa derived from each spermatocyst remain attached to the Sertoli cells, grouped together and parallel to each other in such a way that they appear like bundles. Only occasionally the spermatozoa are free and detached from the wall of the tubes and can be seen as a loose skein. The study of the sexual system of the male toad, "*Bufo arenarum* Hensel," and the relation between the hypophysis and the testicle was started in 1923 by Giusti and Houssay² and continued by several authors.³

Houssay and Lascano González^{3c} said:

It is evident that in the toad the hypophysis has a constant influence on the spermatogenetic testicular activity. . . . The removal of the hypophysis produces testicular atrophy in the toad. . . . The repeated subcutaneous implantation of toad's hypophysis produces testicular hypertrophy in normal and hypophysectomized animals.

Gonadotropic administration stimulates the interstitial cells and the spermatogenesis and acts on the Sertoli cells.

The spermatozoa produced in the ampules are detached from the Sertoli cells by the gonadotropic action, a phenomenon studied in detail by de Robertis, Burgos and Breyter in 1945 and 1946.⁴ Once they are free, following the excretion tubes, the spermatozoa go through the corresponding glomeruli and down the ureter to the bladder and are excreted subsequently with the urine. These batrachia reproduce by external fecundation. During the sexual period, the end of the winter and beginning of spring for the *Bufo arenarum* Hensel, the toads seek small pools or calm waters, and the male toad rides and embraces the female toad. This embrace, or amplexus, is a tonic reflex difficult to overcome, lasts several days and starts a series of nervous and humoral phenomena, among which the discharge of pituitary gonadotropins is the most important. Under the effect of its own gonadotropins, the female toad ovulates and expels the ovules to the exterior in transparent threads of a gelatinous substance produced by the oviduct. In the male toad, the spermatozoa detached by the gonadotropic action are expelled with the urine and fertilize the ovules contained in the ovular threads.

MATERIAL AND METHODS

Batrachia Used.—Up to the time of writing the following batrachia have been used: the *Bufo arenarum* Hensel,⁵ *Bufo*

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4. de Robertis, E.; Burgos, M. H., and Breyter, E.: *Rev. Soc. argent. de biol.* **21**: 269, 1945. *Proc. Soc. Exper. Biol. & Med.* **61**: 20, 1946.

5. (a) Galli-Mainini, C.: *Semana Med.* **54**: 447, 1947. (b) Galli-Mainini, C.: *Obst. y ginec. latino-am.* **5**: 555, 1947. (c) Galli-Mainini, C.: *Obst. y ginec. latino-am.* **5**: 555, 1947. (d) Houssay, B. A.: Read before the meeting of the Sociedad argentina de biología, July 3, 1947; to be published. (e) Figueroa Casas, P.; Belizán, L., and Staffieri, J. J.: Read before the meeting of the Sociedad de obstetricia y ginecología de Rosario, May 22, 1947. (f) Pinto, M., and Suero Boero, H.: *Obst. y ginec. latino-am.* **5**: 556, 1947. (g) Blanchard, O., and Bretton, B.: *ibid.* **5**: 560, 1947. (h) Sala, S. L.; Jachesky, L., and Colotta, C. A.: *ibid.* **5**: 561, 1947. (i) Ferrari, R. A.; Pastor, A. A., and Ledesna, D. A.: *ibid.* **5**: 562, 1947. (j) Merchante, F. R.: *ibid.* **5**: 564, 1947. (k) Gori, R. M.: *ibid.* **5**: 566, 1947. (l) Rodríguez López, M.: *ibid.* **5**: 572, 1947. (m) Pou de Santiago, A.: *ibid.* **5**: 574, 1947. (n) Hutz, A.: Personal communication to the author. (o) Gandolfo Herrera, R., and Sauri, J.: *Obst. y ginec. latinoam.* **5**: 568, 1947.

From the Service of Endocrine Diseases of the Rivadavia Hospital Buenos Aires, Argentina.

1. Galli-Mainini, C.: *Semana med.* **54**: 337, 1947.

paracnemis,⁶ *Bufo marinus* and *Bufo crucifer*,⁷ *Calyptocephallus gayi*,⁸ *Leptodactylus ocellatus*,⁹ *Xenopus laevis*,^{7b} *Odontophrynus*,^{7b} *Rana pipiens*¹⁰ and, lately, *Bufo d'Orbigny* (by me). It should be noted, however, that the possibility of seasonal variation is not known for the *Rana pipiens*. Seasonal unresponsiveness can be observed in some batrachia with "cyclic spermatogenesis," in which spermatozoa are produced only during a certain period, the testicle being at rest between the active seasons. Because of this reason the selection of a batrachia with "continuous spermatogenesis" will provide a reliable test animal throughout the year.

It is interesting to note that Robbins, Parker and Bianco¹¹ have obtained positive results injecting pituitary and chorionic gonadotropin in the male *Xenopus laevis*.

These authors did not state whether they have experimented with pregnant woman's urine and suggested the future use of this animal as reactive for pregnancy.

The batrachia must be male and adult. The sexual characteristics of the male toad are: its size, smaller than that of the female toad, its uniform green color, stronger forearms, dark brownish pigmentation in the inward border of the "thumb"; it "croaks" when taken between two fingers and has the sexual reflex of the amplexus. These characteristics are absent in the female toad.

Weight: The weight of the animal must not be less than 100 Gm. if the *Bufo arenarum* Hensel is used or 25 to 30 Gm. if the *Bufo d'orbigny* is used. The *Bufo paracnemis* Lutz should weigh between 100 to 350 Gm.^{6a}

Captivity: These batrachia are easily captured in large gardens and in the open spaces with vegetation and humidity and are maintained in containers of varied sizes, according to the necessities of the laboratory. Basins of 1 meter by 60 cm. by 60 cm. are used in the laboratory of the Rivadavia Hospital, which allows keeping simultaneously and comfortably about 300 animals in each.

While in captivity, the only requirement of the animals is that the place which they inhabit be kept damp. If basins are used, the dripping of a faucet is sufficient. The place should be humid, but immersion of the animals in the water should be avoided, even partially, as in those conditions they die within two or three days. Moderate temperature is preferable. Excessively low temperatures, such as 4 and 5 C. (39 and 41 F.), retard (but do not inhibit) the reaction. During the time of captivity, which may be of several months, they are not given any food. During this period they live on their reserves and can be used repeatedly.

Collection and Injection of the Patient's Urine.—The specimen of the woman's urine can be that of any time of the day, though that of the first miction of the morning is customarily used. This specimen is placed in a clean nonsterile bottle. The patient from whom the urine is to be obtained does not need to have any special diet the previous day, nor need she deprive herself of any medication. The urine is injected directly in the toad, without filtration, concentration, adjustment of pH or any other previous preparation.

Ten cubic centimeters are injected subcutaneously, either in the dorsum or the abdomen, according to the authors. In the batrachia, the skin adheres to the body only in reduced zones, as the middle of the spine and the ventral line, the head and the joints. In the remaining parts the skin is separated from the body, forming great gaps or sacs, through which the lymph circulates. It is for these reasons that, in spite of being proportionally of great volume, 10 cc. of urine can be injected, since it quickly spreads in these lymphatic sacs.

Procurement of Urine Samples from the Batrachia.—The animal is held dorsally against the table, and a pipet is introduced in the "cloaca," to a depth of about 0.5 cm., and is

gently moved back and forth until a drop of urine is seen to penetrate the pipet.

Microscopic Observation.—The drop of urine thus obtained is placed on a slide and observed directly under the microscope without previous smearing, fixing or staining. Strong illumination should be avoided. In these conditions a positive result is revealed by the presence of many spermatozoa occupying the microscope's field and appearing in great quantities as delicate undulating short dark lines. The mobility of the spermatozoa is of no importance for the interpretation of the result, since what counts is their presence. It is important not to confuse the small scratches that the slides may have and not to illuminate the microscope excessively or to make the observation at great enlargement. In some cases the lack of contrast of the preparation may make the spermatozoa pass unnoticed.

Time of Observation.—Up to the date of writing, 89 per cent of the positive results obtained by me were obtained within two hours of the injection of pregnant woman's urine. According to Blanchard,^{6a} 96 per cent occur within an hour and a half. Sala and his co-workers^{5b} observed that 84.5 per cent occur in an hour and 100 per cent three hours after the injection. For absolute certainty it is convenient to extend observation of the negative reactions until twenty-four hours have passed, if the test is made at low temperatures.

Repetition of the Test in the Same Animal.—There may be an interval of one week between one test and another. Each animal can be used generally four or six times.

Reaction During the Time of Reproduction of the Batrachia.—The period of reproduction of the batrachia is not an obstacle for the realization of the reaction. At this time, spontaneous elimination of spermatozoa has never been observed in the toads which are not embraced. During the sexual period the spermatozoa detach and migrate to the toad's bladder only under gonadotropic stimulation, which is due to the discharge of their pituitary gonadotropins as a consequence of the amplexus.

For greater security, however, the toads captured during amplexus should not be used immediately, and it is convenient to observe microscopically the urine of all the toads before performing the test, to be certain of the negativity of the reaction.

Routine and Practice of the Test in the Laboratory of Rivadavia Hospital.—The toads are brought in quantities, calculated as necessary, approximately for two hundred tests a month, and placed in three basins. Each specimen of urine is injected into 2 toads. The toads kept in the different basins are used alternately in such a way that a minimum of a week elapses before the same animals are used again. When all the toads have been used four or six times, they are discarded and replaced with new ones.

The injection is made subcutaneously, with a syringe of 10 cc. and a large needle. The skin of the middle dorsal line is pierced, and the needle is introduced up to the point where it is noticed under the skin of the lymphatic lateral sac, and the urine is injected. The injections and observations are made during the morning hours. The toads which react negatively the same morning that the injection is given are kept under observation in order that they may be observed again the following day. For each observation the same pipet and the same slide are used; they are washed carefully under water between each reading.

To permit differentiation of the pairs of toads receiving the different specimens of urine, they are kept in small numbered cages or are marked by different colored threads tied on the legs or arms.

After the injection is given, the toads are kept at the natural temperature and illumination of the laboratory.

RESULTS

In all, 2,030 tests have been performed by me, the reactions to which are interpreted as follows: suspected pregnancy up to the fifth month of amenorrhea in 1,896 cases, pregnancies from the sixth to the ninth

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7. (a) Caldeira Algodoal.^{6b} (b) Mello, M. I.: O. Hospital 33: 57, 1948.

8. Gunther, B.: Personal communication to the author.

9. Galli-Mainini,¹ Houssay.^{6a}

10. Wilterberger, P. B., and Miller, D. F.: Science 107: 198, 1948.

11. Robbins, S. L.; Parker, F., Jr., and Bianco, P. D.: Endocrinology 40: 227, 1947.

month in 123 cases, suspected ectopic pregnancies in 7 cases, chorioepithelioma in 2 cases and mole in 2 cases.

Positive or Negative Verified Results.—The accuracy of the result could be verified in 1,422 cases of suspected pregnancy; in 960 instances the patient was not pregnant and negative results were obtained in all. In 462 cases of verified pregnancy, positive results were obtained in 458, i. e., a rate of accuracy of 99.01 per cent. All told, in 1,422 tests, there were errors in 4 cases, a rate of accuracy of 99.72 per cent.

Other authors obtained correct results in 98 per cent to 100 per cent of the tests: 100 per cent in 82 cases of pregnancy of less than five months,^{5c} 99 per cent in 100 cases of pregnancy,^{5d} 99.20 per cent in 103 cases of pregnancy up to the fifth month and ^{5k} 98 per cent in 50 cases ^{5h} (these authors obtained 1 erroneous result, but the reading was made two and a half hours after the injection was given), 98 per cent in one hundred tests in verified pregnancies,^{5l} 100 per cent in 69 cases of pregnancy of less than six months,^{5o} 100 per cent in 300 tests ⁵ⁱ and 98.19 per cent in 165 cases of pregnancy of less than four months.^{5m}

Toxicity of the Reaction.—Of the toads used in 2,030 tests, 23 toads died because of the injection, a mortality rate of 1.13 per cent. Comparatively, in 326 Friedman tests, 14 pairs of rabbits died, that is, 4.37 per cent.

Blanchard and Bretto ^{5k} noted a mortality rate of 1.5 per cent and Figueroa Casas and his co-workers ^{5e} 0 per cent in 150 tests.

Comparative Results with the Friedman Test.—In 326 Friedman tests, 14 pairs of rabbits died. Of the remaining 312 tests, made simultaneously in the toad and the rabbit, 291 gave coincident results. Of the noncoincident results in the 21 cases, in 17 cases the result obtained in the toad was correct and in 2 cases incorrect. In the remaining 2 cases, the results could not be verified.

Speed of the Reaction.—In 522 cases in which the results were positive the reactions were observed at intervals of one, two and twenty-four hours after the injection was given. Of these, reactions were positive in 254 cases at one hour, in 212 at two hours and in 56 within the twenty-four hours. In 3 cases the result was positive in thirty-five minutes. The data obtained indicates that 89 per cent of the positive reactions occur within the first two hours after the injection is given. It is probable that if the results had been observed three hours after the injection was given the majority would have been positive.

Blanchard and Bretto ^{5k} observed that 96 per cent of the positive results were obtained one and a half hours after the injection was given; Sala and his co-workers ^{5h} noted 100 per cent positive results after three hours and 84.5 per cent within the first hour.

Specificity of the Reaction of the Toad to the Injection of Urine.—The injection of 623 specimens of urine of nonpregnant subjects, men, women and children, who were normal or had a variety of pathologic conditions, gave constantly negative results. The results of the administration of other hormones or substances are described further on.

Five hundred and forty-three control tests—which represent the statistics accumulated from other authors ¹²—were made with urine of nonpregnant persons, and in all the cases the result was negative, that is, an accuracy of 100 per cent.

Precocity of the Reaction.—Positive results have been obtained with specimens of urine from pregnant women with as little as four (1 case) and five (2 cases) days of amenorrhea.¹³

Results Obtained with Urine and Serum in Pregnancies Between the Sixth and Ninth Month.—Tests with Urine: Eighty-four tests were made, the reactions to six of which were negative, that is, 92 per cent gave positive results, of which 84 per cent occurred within the two hours after the injection was given.

Tests with Serum: Thirty-nine tests were performed injecting varied quantities of serum (between 3 and 7 cc.), and it was observed that the serum of women in the sixth to the ninth month of pregnancy gave 69 per cent positive reactions, 54 per cent of which occurred within two hours after the injection was made. No relation has been observed between the quantity of injected serum and the result obtained.

Other authors have also observed a lower incidence of positive reactions in pregnancies between the sixth and the ninth month.

Results in Suspected Ectopic Pregnancies.—Of test performed in 7 cases, there were positive correct reactions in 2, in 1 of them in forty-five minutes and another one hour after the injection was given. In the remaining 5 cases, results were verified as negative. The experience of other authors are coincident.

Results of Sixty Quantitative Determinations

Condition or Number of Months of Pregnancy	Number of Positive Results with Various Amounts of Urine Injected					
	4 Cc.	2 Cc.	1 Cc.	0.5 Cc.	0.25 Cc.	0.125 Cc.
1.....	1	3	5	7	1	..
1-3½.....	1	4	5	10	7	4
3½-6.....	..	2	7	2	..	..
Chorioepithelioma...	..	..	..	..	..	1

Chorioepithelioma and Mole.—The reaction was positive in 2 cases of chorioepithelioma and in 2 of hydatiform mole. On the other hand, Pinto and Suer Boero ^{5f} obtained negative results in 1 case of chorioepithelioma.

Quantitative Reactions with Urine of Pregnant Women.—The quantitative determinations were performed as follows:

Increasing dilutions were made with each specimen in such a manner that each one of them contained 4, 2, 1, 0.5, 0.25 and 0.125 cc. of the urine in a total volume of 8 cc. With each one of these dilutions, 2 toads were given injections—12 in total—twenty-four hours after the minimum quantity of urine which produced positive reaction was established.

In order to make approximate comparative estimation of the content of international units of chorionic gonadotropin per liter of urine, it was assumed, on the basis of experiments the results of which are described further on, that approximately 40 international units of chorionic gonadotropin per toad are needed to obtain positive results. Sixty quantitative determinations were performed: in 17 cases with urine of women pregnant less than one month, in 31 cases from one to three and a half months, in 11 cases with specimens of urine of women pregnant more than three months and in 1 case of chorioepithelioma. The results obtained are seen in the table. It is interesting to note that a larger number of positive results were obtained in pregnancies of one to three and a half months of evolution, in which

¹²12. Footnote 5d-m. Mayer, Govi and Flores.⁶

13. Galli-Mainini.¹ Footnote 5a-m. Mayer, Govi and Flores.⁹

period 4 pairs of toads gave positive results with 0.125 cc. of urine; the specimens of urine contained roughly the equivalent of 320,000 international units of chorionic gonadotropin per liter, a quantity equal to that estimated in the case of chorioepithelioma.

Experiments not published yet show that *Bufo d'Orbigny* is more sensitive than *Bufo arenarum* Hensel, since positive reactions are obtained with this animal by injecting 0.015 cc. of urine. This animal, due to his greater sensitivity, is probably the most adequate for quantitative determinations.

Duration of the Gonadotropic Activity of Urine.—Quantitative determinations were performed daily, according to the described technic, and it was observed that the specimens of urine keep a great part of their gonadotropic activity even ten days after their emission, when they are kept at room temperature or at 4 C. (39.2 F.). For instance, positive results were obtained the first day with 1 cc. of a specimen of urine and ten days later with 2 cc. of the same specimen.

The same observation was made by Gori,¹⁴ who noted gonadotropic activity in 8 specimens of urine after they had remained at room temperature for seven days.

Conditions and Factors Related to the Gonadotropic Action in the Male Batrachia.—Some of the factors related to the test have been experimentally studied by me.¹⁴ Houssay¹⁵ and Pinto and me.¹⁶ The complete data on these experiments have been published elsewhere and are not reported here.

Specificity of the Reaction.—Positive Results: Up to the date of writing, positive results have been obtained with chorionic, serous and pituitary gonadotropins, with a follicle-stimulating hormone preparation from bovine pituitary gland (Dr. Mendive) and with crude suspension or implantation of pituitaries from the rat, rabbit and other batrachia.¹⁰

Chorionic gonadotropins produced positive results in male toads after removal of the brain, lungs, gastrointestinal tract, pancreas, spleen and pituitary gland.¹⁰ Pinto and I¹⁶ observed positive reactions following the injection of chorionic gonadotropin, or pregnancy urine, even seventy-eight days after the pituitarectomy.

It has been observed¹⁰ that the hepatectomy enhances the capacity of the toad to react to smaller doses of chorionic gonadotropin.

Destruction of the medulla, unilateral castration and anesthesia do not abolish the reaction to the administration of chorionic gonadotropin and pregnancy urine.¹⁷

Experiments were performed in vitro by Burgos and Mancini,¹⁸ and they observed, on histologic study, free spermatozoa when the medium contained chorionic or serous gonadotropin or crude suspension of toad pituitary.

Negative Results: Consistently negative results followed the injection of 623 specimens of urine from nonpregnant women, men and children, who were in normal health or who had a variety of pathologic conditions. The same results were attained by others with a total of 543 control specimens of urine.¹²

The injection of concentrated or unconcentrated urine from women in menopause or castrated women gave negative results.¹⁰

No response was observed to the injection of different doses of estradiol benzoate, progesterone, testosterone

propionate, desoxycorticosterone, "pitressin" N. N. R., thyroxin, adrenalin and prolactin.¹⁰ These observations were confirmed by Houssay,¹⁵ who also noted negative results following the injection of adrenocorticotropin, corticotropin, pituitary gland from cattle, dog, swine, guinea pig, cat and *Grotalus terrificus*, urine from pregnant rat, ascorbic acid, crude suspension of liver, kidney, adrenals, spleen, heart, muscle, gastrointestinal tract and pituitary intermediate lobe from *Bufo arenarum* Hensel. Negative results were obtained injecting methylene, zinc sulfate and serum from pregnant cow.²⁰ This last result was also obtained by Mayer, Govi and Flores,⁹ in addition to negative responses after injection of urine and serum from pregnant mare and swine.

Minimal Necessary Doses of Gonadotropin.—I¹⁰ studied the response of the toad to different amounts of chorionic gonadotropin. Two hundred and fourteen toads, kept at 15 to 18 C. (59 to 64 F.), received 1, 10, 20, 30, 40, 50, 100, 500, 1,000 and 1,500 international units by injection, and it was noted that 40 international units produced 90 per cent positive results, while with 30 international units only 18 per cent positive responses were obtained. From this experiment it is assumed that the minimal necessary dose is grossly 40 international units of chorionic gonadotropin, if given by injection to a normal toad. This quantity is reduced to 10 international units if hepatectomized toads are used. In 54 such animals, the injection of 10 units gave 82 per cent positive results. When serous gonadotropin is injected, higher doses are necessary to obtain positive results.

Route of Administration.—The intracardiac injection on small doses of chorionic gonadotropin was observed to be more effective than the subcutaneous, intramuscular or intraperitoneal injection. No effect followed the administration of 100 international units, or 10 cc., of pregnant urine by gastric route.

Effect of the Temperature.—Temperature is a modifying factor on the response of the toad to the administration of gonadotropin. It has been observed²⁰ that low temperatures, as 4 or 5 C. (39 or 41 F.), will inhibit the response only when minimal doses are injected. With pregnancy urine or higher doses of chorionic gonadotropin, positive responses are delayed but not inhibited.

Speed of the Reaction.—Spermatozoa are usually observed in the ureter of the toad within ten minutes following the injection of large doses of chorionic gonadotropin and can be obtained from the bladder within twenty to sixty minutes. The reaction takes place more slowly when serous gonadotropin is injected.²¹

Effect of Illumination.—Forty toads were exposed to the light for twenty-four hours and inoculated with small doses of chorionic gonadotropin, and the results compared with those obtained in 40 toads kept in total darkness for the same length of time and treated in similar manner. The results show that these last toads reacted to smaller doses and for a longer time than the ones exposed to the light. However, illumination is not a factor to be taken into consideration when pregnancy urine is injected, as identical results are obtained with toads exposed to the light or kept in darkness. This fact is probably due to the high gonadotropic titer of pregnancy urine.

14. Galli-Mainini,^{1,10}
15. Galli-Mainini, C., and Pinto, R. M.: Read before the meeting of the Sociedad argentina de biología, Nov. 6, 1947; to be published.

16. Galli-Mainini,^{1,10} Houssay.¹⁵

17. Galli-Mainini,¹⁰ Houssay.¹⁵

18. Burgos, M. H., and Mancini, R. E.: Rev. Asoc. med. argent. 61: 918, 1947; Rev. Soc. argent. de biol. 23:165, 1947.

19. Galli-Mainini,^{1,10} Houssay.¹⁵

20. Galli-Mainini,^{1,10} Houssay.¹⁵

21. Galli-Mainini,^{1,10} Houssay.¹⁵

COMMENT

Previous studies, the result of the pregnancy test and the physiologic experiments indicate that the gonadotropic stimulation in the male batrachia has a direct effect on the testicle, where its targets are the interstitial cells, the spermatogenesis and the Sertoli cells. The reaction develops quickly; it is specific for some gonadotropins, and the response is slightly different when chorionic, serous or pituitary gonadotropins are injected.

An interesting fact is the quick response of the Sertoli cells to gonadotropins. Practically, it can be said that the presence of spermatozoa in the batrachian urine is indirect proof that the injected substance has acted on these cells.

This phenomenon, the characteristics of the batrachia as sturdy experimental animals and the speed, simplicity and net end point of the gonadotropic effect, indicate that the male batrachia are useful reacting animals and opens a new field for interesting investigations.

The data of the pregnancy reaction suggest that this new biologic test possesses advantages when compared with the present usual tests.

Specificity.—When urine was injected, positive reactions have been obtained exclusively with urine from pregnant women or with chorioepithelioma or hydatiform mole. The fact that in 1,166 cases control tests gave 100 per cent correct results indicates that, up to the date of reporting, a false positive result never occurred. On the other hand, pregnancy tests were performed in 2,661 cases in all, and results obtained were correct in 98 to 100 per cent.

Speed of the Reaction.—A high percentage of the results can be obtained within three hours following the injection of urine. The present percentage is 89 per cent within two hours according to my studies, 96 per cent positive results and one and a half hours according to Blanchard and Bretto²² and 100 per cent three hours after the injection of urine according to Sala and his co-workers.²³

Simplicity of the Technic.—The performance of the test is simple because: (a) No special preparation of the urine to be injected is needed; (b) the injection is without difficulties; (c) the collection of the toad's urine is simple, and no surgical intervention is needed; (d) the microscopic observation is immediate, without previous histologic procedures; (e) the microscopic differentiation of spermatozoa is simple because of their number and well defined characteristics of structure and movement, and (f) the several steps of the technic can be performed rapidly—usually one observation will not take more than one minute from the moment that the toad is taken from the cage until the result is established.

Clear End Point.—The positivity of the reaction is clearly indicated by the presence of spermatozoa in the toad's urine. Spermatozoa are absent in urine of toads which did not receive injections or received injections with urine of nonpregnant subjects.

Economy.—The economy of the procedure is due not only to the low cost of the toad but also to the fact that no special care is needed, i. e., in matters such as food, handling and personnel. In addition, the same toad can be used again after an interval of one week.

CONCLUSIONS

1. Studies made on the male toad indicate that it is a good reacting animal to gonadotropins.

2. Gonadotropic administration stimulates the interstitial cells and the spermatogenesis and produces detachment of spermatozoa from the Sertoli cells. Free spermatozoa migrate to the bladder and can be obtained by means of a pipet introduced into the cloaca.

3. Up to the time of reporting, this response has been provoked with chorionic, serous and pituitary gonadotropins and with crude suspensions of pituitary gland from other batrachia, the rat and the rabbit.

4. The reaction of the testicles to gonadotropic stimulation is, to some extent, influenced by the dose, the route of administration, the temperature and the illumination.

5. The phenomenon of detachment and migration of spermatozoa has practical application in the diagnosis of pregnancy by means of a new test used on the male batrachia. The presence of spermatozoa in a drop of toad's urine a few hours after the injection of 10 cc. of urine from a pregnant woman indicates a positive result.

6. Results seem to be specific for urine of pregnant women because negative results are constantly obtained when urine from nonpregnant subjects is used.

7. In 2,661 cases, tests made with urine of women suspected to be pregnant yielded correct results in 98 to 100 per cent.

8. A modified technic of this test has proved to be useful for quantitative gonadotropic determinations.

9. This reaction has the advantages of specificity, speed, simplicity, clear end point and economy.

SUMMARY

Results obtained with a new test for the diagnosis of pregnancy in which normal male batrachia are used are reported. A positive result is indicated by the presence of spermatozoa in the animal's urine after the injection of 10 cc. of urine from pregnant women. Accumulated data show 98 to 100 per cent correct results in pregnancy tests in 2,661 cases and 100 per cent exact negative response in 1,166 cases in which control tests were made with urine from nonpregnant subjects. Quantitative aspects were studied as well as the influence of such factors as illumination, temperature, dose of chorionic gonadotropin, method of injection, gonadotropin of different species, total hepatectomy and injection of hormones and substances.

This pregnancy test has the advantages of specificity, simplicity, speed of the reaction, clear end point and economy.

Lafinur 3339, Buenos Aires, Argentina.

We Need to Be Humble.—In all aspects of medicine we need to be humble. We can be proud of what has been accomplished . . . so long as it does not blind us to the fact that most progress has occurred in relation to acute diseases. Despite great advances in the control of bacterial diseases, and however great such advances may be in the future, medical science must always go forward. It is remarkable . . . that no sooner is the cure or control of one disease accomplished than new problems appear to arise. . . . At one time it seemed that gonorrhea could be almost controlled with the sulphonamides, but nowadays it is recognized that a large proportion of cases, many more than hitherto, are sulphonamide-resistant. Is this an example of the aphorism "Make haste to use a new remedy before it is too late," or is it that bacteria are really capable of rapid adaptation? The latter is probably the truth. In due course penicillin-resistant staphylococci may become common, whereupon the whole search must begin again. Likewise with streptomycin, to which resistance appears to be quickly established.—Sir Lionel Whitby, M.D., *British Medical Journal*, July 3, 1948.

Clinical Notes, Suggestions and New Instruments

OUR NATIONAL PARKS AS RAGWEED HAY FEVER REFUGES

OREN C. DURHAM, Ph.D.
North Chicago, Ill.

The accompanying tabular data on the ragweed pollen hazards in the national parks were secured over a period of thirteen years, during which I made field studies and carried out routine atmospheric pollen tests for one or more seasons in each of the parks and areas herein listed, except as noted. Most of the atmospheric tests have been made by the standard technic recommended by the Aero-Allergen Council of the American

From the Abbott Laboratories, North Chicago, Ill.

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Academy of Allergy.¹ The figures for "days of high incidence" refer to the average number of days per season when the ragweed pollen concentration reached or exceeded 25 pollen granules per cubic yard of air. "Maximum atmospheric concentration" refers to the highest number of ragweed pollen granules per cubic yard of air during any one twenty-four hour period. A "seasonal total" is the cumulative figure obtained by adding the number of ragweed pollen granules per cubic yard for each day throughout the season. The "index" figure is an arbitrary rating based on the three factors: average length of season, maximum concentration and average seasonal total.² Areas with an index rating of 10 or more cannot be recommended as suitable for those seeking relief from ragweed hay fever. Preference should be given to parks with indexes less than 5. These may be rated from "fair" to "good." Those areas with indexes less than 1 are excellent ragweed refuges unless heavily infested with sagebrush. It will be noted that the parks of the Rocky Mountain, Cascade, Olympic and Sierra regions are almost entirely free from airborne ragweed pollen.

1. Preliminary Report of the National Pollen Survey Committee of the American Academy of Allergy on Proposed Standardization of Pollen Counting Techniques, *J. Allergy* 17: 178 (May) 1946. Durham, O. C.: The Volumetric Incidence of Atmospheric Allergens: IV. A Proposed Standard Method of Gravity Sampling, Counting, and Volumetric Interpolation of Results, *ibid.* 17: 79 (March) 1946.

2. Durham, O. C.: Evaluation of the Ragweed Hay Fever Resort Areas of North America, *J. Allergy* 8: 175 (Jan.) 1937.

Atmospheric Ragweed Pollen Data for National Parks and Recreational Areas

National Park	Altitude at Sampling Apparatus	Months of Greatest Contamination	Number of Days of High Incidence per Season	Maximum Atmospheric Concentration	Average Seasonal Total Count	Ragweed Pollen Index	Remarks
Acadia (Bar Harbor)*.....	Sea level	Aug.-Sept.	5	76	426	8.00	Some ragweed pollen blown into area; conditions only fair
Bryce Canyon †.....	7,978	Sept.	..	..	...	0.20	Index figure deduced from local inspection and Zion figure
Crater Lake.....	6,500	Aug.	0	4	7	0.072	Only a trace of sagebrush pollen; excellent ragweed refuge
Everglades †.....	Sea level	Aug.-Sept.	..	..	...	1.00	Index figure deduced from Southern Florida records and local inspection
Glacier							
Belton.....	3,200	Aug.	0	5	11	0.10	Only traces of ragweed or sage pollen; excellent ragweed refuge
Many Glacier.....	4,800	Aug.	0	2	9	0.07	Only traces of ragweed or sage pollen; excellent ragweed refuge
Grand Canyon							
South Rim.....	4,900	Sept.	0	4	16	0.12	Small amount of sagebrush; excellent ragweed refuge
North Rim †.....	5,700	Sept.	..	..	...	0.12	Conditions deduced from South Rim data; probably better
Grand Teton †.....	6,700	Aug.-Sept.	..	..	...	0.30	Index figure deduced from Yellowstone data; recommended
Great Smoky Mountains							
Headquarters.....	1,460	Aug.-Sept.	9	70	582	13.00	To be avoided by all ragweed sufferers during August and September
Newfound Gap.....	5,045	Aug.-Sept.	3	32	206	4.00	No hotel or camp facilities on ridge; to be avoided by all ragweed sufferers during August and Sept.
Hawaii †.....	Up to 13,675	.....	..	..	...	0.00	Conditions judged from field surveys
Hot Springs †.....	600	Aug.-Oct.	..	..	...	38.00	To be avoided by all ragweed sufferers from August to October
Isle Royale *.....	600	Aug.-Sept.	1	48	133	2.00	Very good most of the time; pollen on south winds only
Kings Canyon †.....	4,600	.....	..	..	...	0.03	Only bare traces ragweed or sage pollen; excellent ragweed refuge
Lassen Volcanic.....	5,000	.....	0	2	3	0.032	Only trace of sagebrush; excellent ragweed refuge
Mammoth Cave †.....	700	Aug.-Oct.	..	..	...	80.00	To be avoided by all ragweed sufferers August to October
Mount McKinley *†.....	Up to 20,000	.....	..	..	...	0.00	Rating deduced from air data taken at 3 Alaska stations (Durham, O. C.: Atmospheric Allergen in Alaska, <i>J. Allergy</i> 12: 307 [March] 1941)
Mount Rainier							
Longmire.....	2,761	.....	0	0	0	0.00	Perfect record for one season; excellent ragweed refuge
Paradise.....	5,537	Aug.	0	6	12	0.12	Probably average equals that of Mount Rainier; excellent ragweed refuge
White River.....	3,500	.....	1	2	4	0.036	No sagebrush; excellent ragweed refuge
Olympic.....	50	Aug.	0	4	...	0.05	Figures for August incomplete; no sage; recommended ragweed refuge
Platt *.....	800	Aug.-Oct.	..	..	...	75.00	To be avoided by all ragweed sufferers middle of August to late October
Rocky Mountain							
Estes Park.....	8,000	Aug.-Sept.	0	15	149	1.00	Some sagebrush; ragweed sufferers rarely have difficulty
Grand Lake.....	8,000	Aug.-Sept.	0	8	10	0.18	Some sagebrush; ragweed sufferers rarely have difficulty

Atmospheric Ragweed Pollen Data for National Parks and Recreational Areas—Continued

National Park	Altitude at Sampling Apparatus	Months of Greatest Contamination	Number of Days of High Incidence per Season	Maximum Atmospheric Concentration	Average Seasonal Total Count	Ragweed Pollen Index	Remarks
Sequoia.....	6,412	....	0	2	3	0.01	Only bare traces ragweed or sage pollen; excellent ragweed refuge
Shennandoah *†.....	600 to 4,000	Aug. Sept.	..	..	...	20.00	To be avoided by all ragweed sufferers during August and September
Yellowstone							
Mammoth.....	6,387	Aug. Sept.	0	6	20	0.10	Sagebrush abundant; ragweed sufferers rarely affected; recommended
West Yellowstone.....	6,625	Aug. Sept.	0	4	45	0.23	Sagebrush abundant; ragweed sufferers rarely affected; recommended
Yosemite.....	4,000	Aug.-Sept.	0	4	50	0.20	No local ragweeds; very little sage; excellent ragweed refuge
Zion.....	4,448	Sept.	0	5	56	0.33	Trace of ragweed March and April; very little sagebrush; excellent refuge
Other Areas							
Lake Mead National Recreational area.....	1,000	Mar.-Apr.	2	54	350	4.00	Some ragweed in spring, trace in fall; good rating
Black Hills area †.....	5,000	July-Sept.	..	..	...	15.00	To be avoided by all ragweed sufferers July to September
Sun Valley.....	6,000	Aug. Sept.	0	15	20	0.25	Sagebrush abundant; ragweed sufferers rarely affected; recommended

* Field study omitted.

† Atmospheric data as of some adjacent comparable area.

SUDDEN DEATH FOLLOWING INTRAVENOUS
ADMINISTRATION OF "DIODRAST"SAMUEL SIMON, M.D.
Poughkeepsie, N. Y.

The basis for this report is a fatality subsequent to the intravenous administration of iodopyracet injection ("diodrast"). The incidence of such fatalities is rare. Pendergrass and his co-workers,¹ in 1942, following a fatal reaction to iodopyracet injection at the University of Pennsylvania, made a survey of this diagnostic procedure throughout the United States and Canada. They sent out three thousand questionnaires to radiologists and urologists and received a report on 661,800 urographic examinations. In analyzing these reports, they encountered twenty-six unreported fatal reactions to iodopyracet injection in addition to eleven fatalities that had been reported in the literature up to that time. This represented an incidence of one fatality to twenty-five thousand injections. They reported two types of deaths: (1) immediate, due to allergy to the drug, and (2) delayed, due to preexisting major renal damage. Eleven of twenty-six deaths were immediate deaths, occurring in an average time of thirty minutes subsequent to the injection. All of the immediate deaths were of patients who had received iodopyracet injection. None of the patients who died had been subjected to the recently proposed tests for sensitivity to the drug. Pendergrass stated that no immediate deaths had been reported following retrograde pyelography with any contrast mediums.

Deaths following the intravenous administration of iodopyracet injection have also been reported by Crane,² Cumming and Chittenden,³ Dolan⁴ and Goldburgh and Baer.⁵

REPORT OF A CASE

C. F. a 23 year old white man was admitted to the 189th General Hospital in Mourmelon, France, on Oct. 2, 1945, with the chief complaint of blood-tinged urine of three days' duration. The patient stated that he had been involved in an automobile accident three days prior to admission and had

sustained injury at the time to the left upper quadrant of the abdomen and the lower left anterior costal margin. Subsequent to the accident, the patient had noted blood-tinged urine. There were no other urinary symptoms.

Past history revealed that the patient's general health had been good. There was no history of any previous allergic manifestations. There was no history of any previous serious illnesses or operations.

Physical examination revealed a well developed well nourished 23 year old white man who did not appear acutely or chronically ill. He was alert, cooperative and ambulatory. His blood pressure was 140 systolic and 90 diastolic. The heart and lungs were normal. Examination of the thorax revealed moderate tenderness over the left lower ribs anteriorly. Examination of the abdomen revealed no tenderness or rigidity. No masses were noted. There was no costovertebral angle tenderness. The kidneys and spleen were not palpable. The genitalia were normal. Results of the rectal examination were negative.

Laboratory studies revealed that the urine was grossly clear at the time of admission, with a specific gravity of 1.020, no sugar and no albumin. Microscopic examination revealed 10 to 15 red blood cells per high power field. The blood cell count was within normal limits. Blood urea nitrogen was 16 mg. per hundred cubic centimeters.

The clinical impression at the time was that the patient had a contusion of the left lower costal region anteriorly. The possibility of injury to the left kidney was also considered, and an intravenous pyelogram was ordered.

On October 3, the patient was referred to the x-ray department for an excretory pyelogram. Twenty-five cubic centimeters of a 35 per cent sterile aqueous solution of iodopyracet injection was administered intravenously. The drug was given slowly over a period of five minutes. The injection itself was completed without incident. Approximately three minutes after the injection, however, the patient suddenly began to vomit, and he stated that he felt "numb all over." One cubic centimeter of epinephrine was given immediately. The patient at the time evidenced a rapid thready pulse and decided cyanosis. The patient was returned to the ward, and oxygen was administered. Despite all supportive measures, which consisted of administration of oxygen, epinephrine and nikethamide, the patient's cyanosis became more apparent and his respirations became very irregular. The degree of shock increased, and the patient died twenty minutes subsequent to the iodopyracet injection. Clinical impression at the time was that death was an allergic reaction due to iodopyracet injection.

An autopsy was performed the same day by Dr. S. Sjöback, with the following observations. There was decided congestion and edema of all the viscera. The lungs revealed scattered subpleural petechial hemorrhages over all the surfaces. The

1. Pendergrass, E. P.; Chamberlain, G. W.; Godfrey, E. W., and Burdick, E. N.: Survey of Deaths and Unfavorable Sequelae Following the Administration of Contrast Media, *Am. J. Roentgenol.* **48**: 741-765 (Dec.) 1942.

2. Crane, J. J.: Sudden Death Following the Intravenous Administration of Diodrast for Intravenous Urography, *J. Urol.* **42**: 745-760 (Nov.) 1939.

3. Cumming, R. E., and Chittenden, G. E.: Intravenous and Retrograde Urography: Comparative Study, *J. A. M. A.* **106**: 602-606 (Feb. 22) 1936.

4. Dolan, L. P.: Allergic Death Due to the Intravenous Use of Diodrast, *J. A. M. A.* **114**: 138-139 (Jan. 13) 1940.

5. Goldburgh, H. L., and Baer, S.: Death Following the Intravenous Administration of Diodrast, *J. A. M. A.* **118**: 1051-1052 (March 28) 1942.

heart was normal. The gastrointestinal tract revealed internal cyanosis of the mucosa. The brain also revealed many small petechial hemorrhages throughout the white matter.

COMMENT

On the basis of the postmortem observations presented in this case, it was felt that this fatality was allergic in origin. Allergic manifestations to iodine are not rare. This fact must be constantly kept in mind with the administration of iodopyracet injection. In order to forestall such reactions, I have adopted the following precautions in administration:

1. The patient is questioned carefully with regard to any previous history of allergic manifestations: asthma, hay fever, hives, rose colds, excessive sneezing, excessive headaches, headaches due to drugs, previous iodine medication and previous excretory pyelography. The patient should also be questioned with regard to any family history of allergy.

2. A cutaneous test is performed, employing 0.05 cc. of undiluted iodopyracet injection intradermally. Naterman and Robbins⁶ reported 404 patients whom they tested in this manner, following this with an intravenous pyelogram. On the basis of their study, they expressed the belief that if the reaction to an intradermal test is strongly positive, with a wheal larger than approximately 15 mm., a serious general reaction may be expected. In those cases in which a local reaction to an intradermal test does occur, reaction occurs quickly following the injection and reaches a maximum in ten to fifteen minutes.

3. An oral test with undiluted iodopyracet injection is also performed. One to two cubic centimeters of the medium is placed under the patient's tongue and retained there for ten minutes, and then the patient is instructed to swallow. If the patient is sensitive to the drug, within a few minutes numbness about the face, swollen tongue and respiratory difficulty may develop. Dolan³ expressed preference for the oral rather than the cutaneous test. It has been my practice not to perform an intravenous pyelography if there is a definite history of allergy or if intradermal or oral tests elicit a positive reaction.

4. The drug is administered slowly; 1 cc. of contrast medium is injected intravenously, and then two minutes are permitted to elapse, during which period the patient is observed carefully. If there is no undue reaction, the remainder of the drug is administered slowly over a period of five minutes. Not infrequently, the patient may note a fleeting sensation of warmth. If the patient evidences any nausea, vomiting or respiratory difficulty, the injection had best be quickly discontinued.

5. An emergency tray is kept in the same room where the medium is being administered. This tray should contain: a 2 cc. syringe, hypodermic needles, a no. 19 gage needle, a tourniquet, an airway, an ampule file, a rubber-capped bottle of epinephrine (1 to 1,000), a rubber-capped bottle of atropine, ampules of caffeine sodium benzoate and calcium gluconate.

6. The patient should have either a nonprotein nitrogen or urea nitrogen determination prior to excretory pyelography. In the presence of decided renal impairment, evidenced by nitrogen retention, there is greater possibility of a reaction.

7. Patients with decided jaundice may be likely to have a reaction since some iodopyracet injection is eliminated by the liver.

8. Repeated urographic examinations may finally lead to a reaction.

Archer and Harris⁷ described ocular tests for determining sensitivity to iodopyracet injection prior to excretory pyelography. They employed an ocular test in 600 cases to determine sensitivity, and they observed this test to be more sensitive than either the oral or intradermal test.

Robb and Steinberg⁸ in 1939 reported interesting studies with iodopyracet injection as a contrast medium in the visualization of the chambers of the heart and the greater blood vessels. Their

studies would serve to indicate that iodopyracet injection was relatively nontoxic and inert. The relevant feature of their work is that they administered intravenously 25 to 45 cc. of a 70 per cent solution of iodopyracet injection in a period of two seconds. This dosage represents a range of 17.5 to 31.5 Gm. of iodopyracet injection in contrast to the 7 Gm. ordinarily employed for excretory pyelography. This large dose was injected extremely rapidly in this manner in 238 instances without fatality. In a recent communication, Dr. G. P. Robb stated that iodopyracet injection had now been administered in the aforementioned method for angiocardiology in over 800 cases. He reported that thus far there had been no fatalities and in only 5 or 6 cases was there a serious reaction. He stated further that he was regularly administering 1 cc. of a 70 per cent solution of iodopyracet injection intravenously to test for sensitivity.

SUMMARY

A case report of sudden death following the intravenous administration of iodopyracet injection ("diodrast") is presented. Precautionary measures in the use of iodopyracet injection are outlined.

94 Market Street.

Council on Foods and Nutrition

This paper was prepared at the request of the Council on Foods and Nutrition. JAMES R. WILSON, M.D., Secretary.

PASTEURIZATION AND ITS RELATION TO HEALTH

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and

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The importance of pasteurization in safeguarding milk supplies has been demonstrated conclusively over a long period of years. That raw milk can and does transmit disease and that pasteurization prevents such transmission has been proved to the satisfaction of health authorities by laboratory and commercial scale experimental work, by epidemiologic methods, by statistical methods and by animal experimentation.¹ More than five hundred and fifty American municipalities now require the pasteurization of all milk or of all except certified milk,² and action on a statewide basis recently has been taken by Utah, Michigan and Colorado.

REVIEW OF REPORTS

From time to time, however, the merits of pasteurization are challenged. One of the most recent attacks was embodied in a series of three articles in *The Rural New Yorker* and reprinted at the request of the Pennsylvania Raw Milk Producer-Distributors Association.³ As such attacks may do harm to the public health by tending to discourage the use of pasteurized milk, it is important that physicians be armed with the facts.

The literature is replete with accounts of outbreaks of milk-borne disease. Armstrong and Parran⁴ listed

Sanitary Engineer (R) (Mr. Andrews) and Sanitary Engineer Director (Mr. Fuchs), Milk and Food Section, United States Public Health Service.

1. Fuchs, A. W.: Milk and Its Relation to Disease, Federal Security Agency, United States Public Health Service, 1940.

2. List of American Communities with Compulsory Pasteurization, Federal Security Agency, United States Public Health Service, October 1946.

3. Darlington, J. B.: Why Milk Pasteurization? New York, The Rural New Yorker, 1947.

4. Armstrong, C., and Parran, T.: Further Studies on the Importance of Milk and Milk Products, as a Factor in the Causation of Outbreaks of Disease in the United States, Supplement 62, Public Health Reports, United States Treasury Department, Public Health Service, 1927.

6. Naterman, H. L., and Robins, S. A.: Cutaneous Test with Diodrast to Predict Allergic Systemic Reactions, J. A. M. A. 119: 491-493 (June 6) 1942.

7. Archer, V. W., and Harris, I. D.: An Ocular Test for Sensitivity to Diodrast Prior to Intravenous Urography, Am. J. Roentgenol. 48: 763-765 (Dec.) 1942.

8. Robb, G. P., and Steinberg, I.: Visualization of the Chambers of the Heart, Pulmonary Circulation and Great Blood Vessels in Man: Practical Method, Am. J. Roentgenol. 41: 1-17 (Jan.) 1939.

seven hundred and ninety-one outbreaks of milk-borne disease in the United States as having been reported in the literature from Jan. 1, 1881, to Jan. 1, 1927. Beginning in 1923, the United States Public Health Service has made annual questionnaire surveys. For the twenty-three year period 1923-1945, state and local health authorities reported a total of nine hundred and fifty-five epidemics traced to milk and milk products, as shown in the table.⁵

Thus, during the period 1923-1945, there has been reported an annual average of forty-one outbreaks, involving 1,750 cases with 35 deaths. These data represent only a fraction of the actual amount of disease transmitted through milk and milk products. The reporting of outbreaks is probably far from complete, as is indicated by the fact that for 1938, for example, three states with only about one sixth of our population reported nearly as many outbreaks as all other states combined and that thirty-one states failed to report any outbreaks due to milk.⁶

The data given in the table do not include sporadic cases of such diseases as typhoid, scarlet fever and

Milk-Borne Disease Outbreaks Reported by State and Local Health Authorities as Having Occurred in the United States During the Years 1923-1945, Inclusive, by Disease

Disease	Outbreaks	No. of Cases	No. of Deaths
Typhoid	440	7,449	341
Scarlet fever and septic sore throat...	202	19,199	162
Food poisoning and gastroenteritis...	196	9,780	19
Brucellosis (undulant fever).....	34	275	3
Paratyphoid	27	1,063	22
Dysentery	20	1,413	20
Diphtheria	18	324	13
Miscellaneous	15	683	4
Total.....	953	40,177	504

septic sore throat, many of which may be milk borne. Furthermore, they do not include tuberculosis of bovine origin, infantile diarrhea nor any significant amount of brucellosis (undulant fever), all of which are largely milk borne but which usually occur as sporadic cases rather than in epidemic form. For 1945, about 5,049 cases of brucellosis and 101 deaths were reported in the United States. A considerable proportion of these cases, perhaps half, are believed to have been due to raw milk from infected animals. It is obvious that the actual amount of milk-borne disease is several times that indicated in the table.

The vast majority of the reported outbreaks of milk borne disease are due to raw milk and milk products. The reports received by the Public Health Service show that the risk of contracting disease from raw milk is approximately fifty times as great as from pasteurized milk (including milk which was only alleged to be "pasteurized milk").⁷

Pasteurization is the most important protective measure which can be applied to milk. Examination of cows and milk handlers, while desirable and of great value, can be done at intervals only, and, consequently, pathogenic organisms may enter the raw milk for varying periods before the condition is discovered. Raw milk may also become contaminated by disease bacteria

from other sources, such as flies and contaminated water and utensils, and no practicable frequency of inspection would prevent such contamination. It is not feasible to perform routine bacteriologic tests on raw milk to determine the presence or absence of all the pathogens which might be present. Even if simple test procedures were available, it is difficult to visualize any practicable testing frequency that would give positive assurance that the raw milk would always be free from infection. Accordingly, it is obvious that milk should be pasteurized to make it safe. This viewpoint is supported by the practically unanimous opinion of medical, public health and nutritional authorities.⁸

Pasteurization is performed by heating every particle of milk to at least 143 F. and maintaining this temperature for at least thirty minutes, or to at least 160 F. maintained for at least fifteen seconds. It has been proved that these time-temperature combinations, if actually applied to every particle of milk in approved and properly operated equipment, will devitalize all milk-borne pathogens.⁹

That pasteurization is economical and feasible has been proved by its widespread use. More than 75 per cent of the market-milk supply of American communities of over 1,000 population is pasteurized.¹⁰ The objections that have been raised to pasteurization are unsound. The average consumer is not able to detect any flavor difference when asked to choose, on "blind-fold test," between raw and pasteurized samples of high quality milk from the same source. Pasteurization does not, as recently charged, destroy the "friendly bacteria" while leaving the pathogens unharmed.

Although pasteurization is a heat treatment far less severe than that given to most foods during cooking, it is often claimed that pasteurization seriously reduces the nutritive value of milk, and various experimental results purporting to show injury to individual constituents of milk are often cited. Actually, definite reductions of nutritive elements due to pasteurization have been proved in only a few instances, and these reductions have not been shown to affect significantly the over-all value of milk in the diet.

Some investigators have reported that there is a slight loss of calcium due to pasteurization; another found no discernible difference between raw and pasteurized milk, and still others observed that calcium and phosphorus were as readily available in pasteurized as in raw milk.¹¹ The alleged losses of calcium are less than the natural variations of calcium in raw milk. Also, it might be pointed out that cow's milk, even if the alleged losses be accepted for the sake of argument, is nevertheless a much richer source of calcium than human milk.

8. Fuchs,¹ Rosenau, M. J.: *Preventive Medicine and Hygiene*, ed. 6, New York, D. Appleton-Century Company, Inc., 1940. Preliminary Report of Committee on Milk Production and Control, White House Conference on Child Health and Protection, Public Health Service and Administration, Pub. Health Rep. 46: 769-811 (April 3) 1931. Babcock, C. J.: *The Pasteurization of Milk*, Leaflet 177, United States Department of Agriculture, January 1939. Godfrey, E. S.: *Pasteurization of Milk*, Bulletin M. S. 53, New York State Department of Health, 1945. Frank, L. C.: *What Every Person Should Know About Milk*, Supplement 150, Public Health Reports, United States Treasury Department, Public Health Service, 1939.

9. Fuchs,¹ Milk Ordinance and Code Recommended by the U. S. Public Health Service, 1939, Public Health Bulletin 220, Federal Security Agency, United States Public Health Service, 1940.

10. Fuchs, A. W., and Frank, L. C.: *Milk Supplies and Their Control in American Urban Communities of Over 1,000 Population in 1936*, Public Health Bulletin 245, United States Treasury Department, Public Health Service, 1939.

11. (a) Status of Pasteurization of Milk and Milk Products: Report of the Milk and Dairy Products Committee, Food and Nutrition Section, American Public Health Association, J. M. J. Pub. Health (supp.) 29: 36-41 (Feb.) 1937. (b) Fuchs, A. W., and Frank, L. C.: *Pasteurization and the Nutritive Value of Milk*, mimeographed.

5. Summary of Milk-Borne Disease Outbreaks Reported by State and Local Health Authorities as Having Occurred in the United States During the Years 1923-1945, Inclusive, Federal Security Agency, United States Public Health Service, April 1947.

6. Frank, L. C.: *Disease Outbreaks Resulting from Faulty Environmental Sanitation*, Pub. Health Rep. 55: 1373-1383 (Aug. 2) 1940.

7. Fuchs, A. W.: *Disease Outbreaks from Water, Milk and Other Foods in 1939*, Pub. Health Rep. 56: 2277-2284 (Nov. 28) 1941.

Milk is not regarded as a good source of iodine, for the iodine content of milk is small and variable, ranging from 0.001 to 0.275 parts per million.¹² Nevertheless, a report that pasteurization causes a loss by volatilization of 20 per cent of the iodine in milk has been cited as evidence that pasteurization is detrimental to the food value of milk. Perusal of the original report reveals that the milk was held for thirty minutes at 158 F.—15 degrees above the present day pasteurization standards—and thus was subjected to a heat treatment considerably severer than the modern pasteurization process.¹³

No evidence has been found in the literature of any loss of vitamin A, or carotene,¹⁴ or of any lowering of the vitamin D content^{15a} due to pasteurization.

Although it is frequently claimed that vitamin B₁, or thiamine, is reduced 25 per cent by pasteurization, by the holder process, a reduction of about 10 per cent is oftener reported in the recent literature.¹⁴ In a study in 1945,¹⁵ a loss of only 3 per cent was reported in the case of milk pasteurized by the high temperature-short time method. With increasing interest in fortified flour and cereals, the slight loss of vitamin B₁ is of little significance.^{11b}

It has been claimed that pasteurization destroys from 9 to 16 per cent of vitamin B₂. Perusal of the original report reveals the statement:

Since it is customary, during commercial processing of milk, to carry out pasteurization by heating the raw milk in a thin film, during which time it may be exposed to light in the plant and therefore subject to considerable riboflavin destruction, the loss of the vitamin during this treatment has been investigated.¹⁶

In the United States it is almost universal practice to pasteurize market milk in pasteurizers which are completely covered, to exclude possible contamination, and it is therefore believed that the reported losses of 9 to 16 per cent would not occur under the latter conditions. In fact, recent reports generally agree that there is no significant loss of riboflavin as a result of pasteurization by either the high temperature-short time method or by the holding method.¹⁴ For example, in the experiments in 1945 by Holmes and his co-workers¹⁵ there was no loss in the riboflavin content of milk pasteurized by the high temperature-short time method, and it was reported that earlier studies by some of the same investigators revealed a loss of only 2 per cent when milk was pasteurized for thirty-three minutes at 144 F. in a stainless steel pasteurizer. Riboflavin is sensitive to light, and considerable loss of riboflavin results when milk is exposed to light, as in glass bottles left on the customer's porch in the sunlight for some time. However, it should be emphasized that these losses are not due to pasteurization.

Pyridoxine and nicotinic acid are very stable compounds, and, therefore, no loss of these factors is to be expected from pasteurization. Pantothenic acid is somewhat more labile, but preliminary results indicate that pasteurization does not inactivate it. Professor

Peterson has determined the biotin content of milk before and after pasteurization and observed no difference.^{11b}

Destruction of as high as 50 per cent of the vitamin C, due to pasteurization, has been claimed. The recent literature indicates that the destruction during pasteurization by the holder method is considerably less than 50 per cent and is probably in the neighborhood of 20 per cent.¹⁷ Data given by Holmes and his co-workers¹⁵ indicate vitamin C losses of 18.7 per cent and 18.3 per cent due to pasteurization of milk at 143 F. for thirty minutes in stainless steel pasteurizers. These figures represent the results obtained on two different mixed herd milks over eighteen month periods in 1938 and 1943. Elimination of copper from pasteurizing plant equipment is reducing the loss of vitamin C during pasteurization by the holder method, for traces of copper decidedly accelerate that action. Elvehjem stated that the presence of copper has a greater effect on vitamin C than heating.^{11b} The experiments in 1945 of Holmes and his co-workers showed no loss of vitamin C due to pasteurization of milk by the high temperature-short time method. Vitamin C is adversely affected by oxygen and light, and there are numerous opportunities for loss of the vitamin in the production, processing and distribution of milk, raw or pasteurized. For example, Wilson^{17a} referred to a study in which the vitamin C contents of grade A raw milk and of ordinary pasteurized milk after one day's storage were compared at different times of the year, and the average content actually was higher in the pasteurized milk than in the raw milk.

An adverse effect on vitamin E by pasteurization appears unlikely, in view of its resistance to heat treatment when present in wheat germ oil.¹⁸ Elvehjem reported indications of a slight deficiency of vitamin E, and perhaps vitamin K, when dogs are maintained solely on heat-treated milk through the reproduction period,¹⁹ but this observation does not appear to be of practical concern in human nutrition.

The effect of pasteurization on the mineral and vitamin constituents of milk may be summarized briefly as follows: No significant effect on the minerals of milk has been proved; vitamins A and D and pyridoxine, nicotinic acid, pantothenic acid and biotin are believed to be unaffected by pasteurization; vitamin B₂, or riboflavin, and vitamins E and K are practically unaffected; vitamin B₁, or thiamine, is reduced 3 to about 20 per cent, depending on the pasteurizing methods used, and vitamin C is reduced by an amount ranging from a small value to perhaps 20 per cent, depending on the methods and precautions observed in processing. Thus, the only appreciable losses are those of vitamins C and B₁, and these losses are not believed to be significant from the over-all nutritional standpoint. Milk is not a rich source of these vitamins, and adequate diets should contain foods other than milk, including such items as citrus fruits for vitamin C and whole grain or enriched products for thiamine.

COMMENT

It should be emphasized that milk is seldom used as the sole article of diet; hence, the physician is not so much interested in the precise quantitative effect of

12. Rogers, L. A., and others: *Fundamentals of Dairy Science*, New York, Reinhold Publishing Company, 1935.

13. Magee, H. E., and Glennie, A. E.: II. Studies on the Effect of Heat on Milk: IV. The Iodine Content, *Biochem. J.* **22**: 11-14, 1928.

14. Food Values of Dairy Products as Affected by Methods of Handling in Production, Distribution and Use: Report of Committee on Milk and Dairy Products, Food and Nutrition Section, American Public Health Association, *Am. J. Pub. Health* **37**: 1113-1120 (Sept.) 1947.

15. Holmes, A. D.; Lindquist, H. G.; Jones, C. P., and Wertz, A. W.: Effect of High-Temperature Short-Timed Pasteurization on the Ascorbic Acid, Riboflavin, and Thiamine Content of Milk, *J. Dairy Sci.* **28**: 29-33, 1945.

16. Zeigler, J. A., and Keevil, N. B.: Photochemical Destruction of Riboflavin in Milk and Losses During Processing, *J. Biol. Chem.* **155**: 605-606 (Oct.) 1944.

17. (a) Wilson, G. S.: *The Pasteurization of Milk*, London, Edward Arnold & Co., 1942. (b) Elvehjem.^{11b}

18. Rogers and others.¹² Wilson.^{17a}

19. Elvehjem.^{11b} Anderson, H. D.; Elvehjem, C. A., and Gonce, J. E., Jr.: Comparison of Nutritive Values of Raw, Pasteurized, and Evaporated Milks for the Dog, *J. Nutrition* **20**: 433-443 (Nov.) 1940.

pasteurization on individual constituents of milk as in the over-all nutritive value of pasteurized milk. Is pasteurized cow's milk as valuable as raw cow's milk in the diet of human beings? In order to determine the effect on growth of raw and pasteurized milk, many experiments have been conducted in America and England on children, calves, pigs, mice and rats. The experiments have been critically reviewed by Wilson,^{17a} who summarized them essentially as follows: Many of the studies have been faulty in design and execution, and the conclusions cannot be accepted without reserve. It is difficult to make satisfactory comparisons, because cow's milk is not a perfect food for any of these animals. An exclusive milk diet for a prolonged period is likely to be followed by anemia, rickets, scurvy or other disturbances. However, several experiments have been carefully conducted between groups of animals fed on raw or pasteurized milk with just a sufficient supplement to prevent the development of nutritional disease. Experiments on rats have not established a definite diminution in the total nutritive value of cow's milk as a result of pasteurization. The observations on mice are difficult to interpret, since the behavior of the animals appeared to depend on the way in which the milk was fed, but suggest that if any difference does exist between raw and pasteurized milk, it must be small and could be determined only by the use of large numbers of animals. Experiments on a total of 250 calves by six different groups of workers produced conflicting individual results, but when all the observations were combined it was observed that the mean increase in weight of the animals receiving raw milk was 1.232 pounds (about 0.559 Kg.) per day as compared with 1.273 pounds (about 0.578 Kg.) per day for those receiving pasteurized milk. It was observed, incidentally, that pasteurization of tuberculous milk protected the calves from contracting the infection. In the most recent comparison in children, little difference was observed between those receiving raw and those receiving pasteurized milk. On the average, the children receiving raw milk gained slightly more in weight and those receiving pasteurized milk gained slightly more in height, but the differences were not significant.

Wilson concluded that the results of various experiments with different animals, including children, are in general accord and fail to show that the pasteurization of milk by the holder method has any significant effect in lowering its total nutritive value for the growing animal.

McCollum²⁰ pointed out:

The opponents of pasteurized milk have conspicuously failed to make a case against it in favor of the raw product. The decided lessening of incidence of intestinal troubles and contagious diseases carried by raw milk through pasteurization makes it hard to understand how opposition can longer be justified.

He also stated:

Since the effect of pasteurization on the food value of milk is too slight to be apparent even in specially designed experiments, and is not apparent in observations on children living under ordinary American conditions, there is no valid argument which can be brought forward in support of the marketing of raw milk for the general population.

It appears obvious that American physicians and health authorities are justified in recommending that all milk be pasteurized.

20. McCollum, E. V.: *The Nutritional Aspects of Milk Pasteurization*, Am. J. Pub. Health 24: 956-958 (Sept.) 1934.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

The Council has authorized publication of the following reports.

AUSTIN SMITH, M.D., Secretary.

METHAPYRILENE HYDROCHLORIDE GENERIC DESIGNATION FOR N,N-DIMETHYL-N'-(ALPHA-PYRIDYL)-N'-(ALPHA-THENYL)ETHYLENEDIAMINE HYDROCHLORIDE AND PROTECTED NAME THENYLENE HYDROCHLORIDE (ABBOTT LABORATORIES):

In the consideration of two brands of N,N-dimethyl-N'-(alpha-pyridyl)-N'-(alpha-thenyl) ethylenediamine hydrochloride, the Council was obliged to determine a satisfactory generic name. After due consideration, the term methapyriline hydrochloride was chosen. The Council has voted to accept a brand of this agent marketed by the Abbott Laboratories under the protected name "Thenylene Hydrochloride." The protected name proposed by another firm was found to be objectionable and has not been recognized.

METOPON HYDROCHLORIDE GENERIC DESIGNATION FOR METHYLDIHYDROMORPHINONE HYDROCHLORIDE

The Council recently published a paper on Metopon (J. A. M. A. May 22, 1948, p. 365), prepared by Dr. Nathan B. Eddy, Secretary of the Committee on Drug Addiction and Narcotics of the National Research Council, without having first formally published its recognition of the generic term. Since this term has been in use for some time by the U. S. Public Health Service for this preparation of methyldihydromorphinone hydrochloride and since there appears to be no objection to its use, the Council adopted the foregoing statement of recognition and authorized its publication.

NEW AND NONOFFICIAL REMEDIES

The following articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Non-official Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

LIQUID PETROLATUM-U.S.P. (See New and Non-official Remedies 1947, p. 320).

The following dosage forms have been accepted:

THE E. L. PATCH COMPANY, BOSTON

Emulsion Kondremul (Plain): 500 cc. bottles. An emulsion of mineral oil and Irish Moss (*Chondrus Crispus*).

Emulsion Kondremul with Cascara: 400 cc. bottles. An emulsion of mineral oil with nonbitter extract of cascara and Irish Moss (*Chondrus Crispus*).

Emulsion Kondremul with Phenolphthalein: 500 cc. bottles. An emulsion of mineral oil with phenolphthalein and Irish Moss (*Chondrus Crispus*).

NICOTINAMIDE-U.S.P. (See New and Nonofficial Remedies 1947, p. 514).

The following dosage forms have been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Solution Nicotinic Acid Amide: 100 mg. per cc., 10 cc. vials. Preserved with chlorobutanol 5 mg.

Tablets Nicotinic Acid Amide: 100 mg.

RIBOFLAVIN-U.S.P. (See New and Nonofficial Remedies 1947, p. 511).

The following dosage form has been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Tablets Riboflavin: 5 mg.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 8, 1948.

Party to Attend Hospital Dedication

Led by heads of the Army, Navy and Air Force medical departments, a Washington group bound for dedication ceremonies at Tripler General Hospital, Honolulu, is scheduled to depart from the Capital by plane on Labor Day. Members of the party will attend sessions of the Pan Pacific Surgical Association on September 9, as well as the Tripler dedicatory program on the following day. They will be joined in Honolulu by Dr. Ernst E. Irons, President-Elect, and probably other representatives of the American Medical Association. The group will be composed of the following: Maj. Gen. Raymond W. Bliss and Rear Adm. Clifford A. Swanson, Surgeons General of Army and Navy, respectively; Maj. Gen. Malcolm C. Grow, Air Surgeon; Dr. W. P. Dearing, Deputy Surgeon General of the U. S. Public Health Service; Rear Adm. Joel T. Boone, executive secretary, Committee on Medical and Hospital Services of the Armed Forces; Brig. Gen. George E. Armstrong, Army Deputy Surgeon General; Maj. Gen. Norman T. Kirk, former Army Surgeon General; Col. Mary G. Phillips, chief of Army Nurse Corps; Rear Adm. Paul M. Albright, assistant chief, Bureau of Medicine and Surgery; Col. A. L. Tynes, chief of Army hospital construction; Maj. Gen. John M. Willis, commandant of Brooke Army Medical Center; Col. William Powell, member of the Hawley Board's executive committee; Dr. Wilburt C. Davison, dean of Duke University School of Medicine; Dr. Herman G. Weiskotten, dean, Syracuse University College of Medicine; Dr. Carleton Mathewson, San Francisco Hospital; Gerald G. Gross, editor of Washington Report on the Medical Sciences and public relations consultant to Gen. Bliss; Col. Elbert DeCoursey, of Brooke Army Medical Center; Brig. Gen. Leonard Heaton, chief of surgery at Letterman General Hospital.

General Heaton, Col. DeCoursey and Dr. Mathewson will join the party in San Francisco. From Honolulu certain military members of the contingent will continue to Guam to study possibilities of consolidating Army and Navy hospital facilities on the island. Included in this group will be General Bliss, Admirals Swanson, Boone and Albright, and Col. Powell.

Dr. Draper Joins Retirement Fund Staff

Although neither American Red Cross nor United Mine Workers had issued any announcement of the transfer as of August 28, Dr. Warren F. Draper is retiring from his Red Cross post and will join the United Mine Workers Welfare and Retirement Fund staff early in September. He will serve as executive officer of the fund's medical branch, in association with Dr. R. R. Sayers, chief. For the past two years Dr. Draper has been with Red Cross as deputy to Dr. G. Foard McGinnes, vice president for medical services. During the first half of that tenure, he was on loan from U. S. Public Health Service, of which he formerly had been Deputy Surgeon General. On his statutory retirement, for age, from the U. S. Public Health Service in 1947, he remained in Red Cross service. During a great part of World War II, Dr. Draper was on assignment to Army forces overseas with the rank of major general.

Report of Poliomyelitis Cases

Encouraged by a decline in the number of reported cases of poliomyelitis, the U. S. Public Health Service authorities are hopeful—but still far from certain—that the peak for 1948 has been reached. During the week ended August 21, a total of 1,307 new cases was reported to Washington. This compared with 1,409 for the previous week and marked the first weekly decline since May 22. Also, it was the fourth consecutive week with a case figure below that for the corresponding seven day period in 1946, which was the nation's most serious poliomyelitis year since 1916. Another heartening development was the reduction in case reports from Texas, North Carolina and

California, the states that have been hardest hit this year. For the week ended August 21, only three states reported increases of 10 or more cases over the preceding week. They were New York, whose 99 new cases compared with 59 the previous week; Minnesota, up from 57 to 67, and Wisconsin, from 26 to 36. Rhode Island retained its distinction of being the only state in the Union where not 1 case of poliomyelitis had been diagnosed and reported this year up to August 21. The grand total for 1948 up to that date was 9,743 cases, compared with 3,221 for the same period in 1947 and 8,841 in 1946. The five year median is 4,308.

R.O.T.C. Units

In preparation for the coming academic year, the newly assigned Medical, Dental, Veterinary and Medical Service Corps officers who will command Army R.O.T.C. units in professional schools this fall assembled at the Pentagon August 25-27 for an orientation conference. They were addressed and "briefed" by division chiefs in the Surgeon General's Office on Selective Service regulations, administrative duties and miscellaneous responsibilities.

Scheduled to have R.O.T.C. units in 1948-1949 are 51 medical schools, 18 dental schools, 6 colleges of veterinary medicine and 4 pharmacy schools. Eight of the medical schools will be joining the program, now entering its third year, for the first time. They are Boston, Columbia, Harvard, Kansas, South Carolina, Tulane, Washington (Seattle) and Emory.

The Army has never had R.O.T.C. instruction in pharmacy schools before, and this will mark the end of a fifteen year hiatus in dental and veterinary schools, where it was discontinued in 1933.

Critical Pharmaceuticals

Two pharmaceutical items are included among the twenty-eight critical materials which are on the Munitions Board's stockpiling list for the purchase period ending October 1, it has been announced by the National Military Establishment. The purchase program calls for delivery before June 30, 1949.

"While the Munitions Board plans the stockpiling program," said the announcement, "companies having strategic and critical materials which can be spared for the national stockpiles should deal directly with the Bureau of Federal Supply, Department of the Treasury, which makes the actual purchases."

The pharmaceutical items and the quantity scheduled to be contracted for by October 1 are as follows: quinidine, 6,000 ounces; castor oil, 15,000,000 pounds.

Committee Solicits Complaints of Government Doctors

A spokesman for the Hoover Commission's medical services committee, which is studying federal medical care activities, reports excellent response to the questionnaire which was mailed in mid-August to physicians, dentists and nurses on government payrolls, or who formerly were in federal service. The purpose of the poll was to obtain candid comment on the way that their skills were or are being utilized in the Army, Navy, Veterans Administration and U. S. Public Health Service and to stimulate constructive criticism.

The replies will help the committee, whose head is Tracy S. Voorhees, Assistant Secretary of the Army, in the formulation of its forthcoming report, which will recommend certain administrative reforms in federal medical and hospital functions. A sampling of several thousand physicians, dentists and nurses will be covered in the questionnaire survey, which is under the immediate supervision of Dr. Edward D. Churchill, chairman of the medical man power subcommittee.

Labor Department Reports on Insurance Plans

A report by the Department of Labor discloses that upward of 3,000,000 American workers are covered by health-pension insurance contracts with their employers. This is a fivefold increase over the 1945 figure, according to the Bureau of Labor Statistics survey on which the report is based.

GOVERNMENT SERVICES

ARMY

MEDICAL MEETING IN KOREA

The monthly meeting of Army Medical Department officers stationed in Korea on July 21 was sponsored by the Department of Public Health and Welfare, USAMGIK. The sixty officers and twenty-five civilian physicians and nurses who attended visited the Sun Wha City Contagious Disease Hospital in Seoul, where Dr. Y. S. Yun presented cases illustrating the various stages of syphilis and Dr. C. M. Myun, discussed the treatment of tuberculosis as carried out at the hospital. In the contagious disease section, several cases of smallpox and diphtheria were observed. In the afternoon, Dr. P. S. Han discussed the vital statistics available in South Korea. Lieut. William I. Rolph, M.C., Advisor to the Department of Public Health and Welfare, discussed the recent movement of refugees from Manchuria to South Korea, outlining the measures taken for the prevention of diseases among them. Captain M. H. Heeren, Nursing Advisor, outlined the means taken to bring the nursing standards and social position of Korean nurses up to a level comparable to those of the United States. Dr. H. C. Mason, supervisor, conducted a tour of the National Biological Laboratories, which are industriously engaged in raising public health and therapeutic standards in South Korea. A visit was made also to the Receiving Home for Orphans, where the methods of care and disposition of the children were outlined by Mr. M. W. Scherbacher.

SPECIALIST RATING IN PREVENTIVE MEDICINE

Medical officers who want to be certified as specialists in preventive medicine may now submit applications to the Interim Board of Preventive Medicine which will administer the examinations and certification. This board was formed by joint action of the Surgeons General of the Army, Navy and Public Health. The qualifications, among other things, include graduation from a medical school and internship in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association or by the Army or Navy, the degree of Master of Public Health or its equivalent, membership in the American Medical Association and experience in a responsible position in the field of public health or preventive medicine. The examinations will be held during the fall of this year or the spring of 1949.

POSTGRADUATE COURSES

Fifty-eight additional Army Medical Department officers will shortly begin courses in various subjects in civilian schools and hospitals. In this number are five lieutenant colonels, one major, three captains, forty-eight first lieutenants, and one second lieutenant, representing various corps of the Medical Department.

NAVY

RESEARCH AT GREAT LAKES ON RESPIRATORY DISEASES

A Navy medical research unit designed to develop methods of respiratory disease control is being established at the Naval Training Center, Great Lakes, Ill. The unit will conduct laboratory tests of measures designed to control the spread of the common cold, tonsillitis, scarlet fever, influenza and pneumonia. Clinical records of all cases of such diseases at the Naval Training Center will be correlated with data on climate, living conditions, physical fitness and diet. The Naval Training Center at Great Lakes, having about 25,000 officers and enlisted men, was chosen as an ideal location for the study of epidemiology. While medical treatment and isolation have reduced fatalities from respiratory ailments to a minimum, these diseases remain the greatest annual cause of man-work days lost by illness.

The research unit is being installed in permanent quarters and when completed will offer complete facilities necessary for the studies. The main laboratory is designed to provide office space and laboratories where the bacteriologic, virologic, serologic and chemical studies can be carried out. Observations on the personnel of the naval center will be carried out in the medical dispensaries throughout the station with the cooperation of the medical department of the Training Center. Conversion of laboratory buildings will be completed about Jan. 1, 1949.

The research staff will consist of four Navy medical officers, seven civilian scientists, sixteen naval enlisted technicians and eight civilian technicians. Consultants will be associated with the unit and by periodic visits will advise in the direction of the studies. Lieutenant Commander John R. Seal of the Navy Medical Corps is officer in charge of the unit. Other Navy medical research units are stationed in California and Egypt. Unit 1, composed mostly of civilian scientists, is located at the University of California. Directed by Captain Albert Krueger, MC, U. S. N. R., a reserve medical officer now on inactive duty, this unit is engaged in studying bacteriology, particularly virus growth. Unit 3, under Commander R. A. Phillips, is stationed in Cairo, Egypt. This unit is conducting research on parasitic diseases and other ailments native to Northern Africa.

ACCEPTED FOR POSTGRADUATE INSTRUCTION

The following medical officers have been accepted for postgraduate instruction at the institutions indicated: Commander John J. Eberhart, Nashville, Tenn., residency in psychiatry at the University of Louisville School of Medicine in Kentucky; Commander Vinton Hall, South Pasadena, Calif., course in dermatology and syphilology at the University of Southern California in Los Angeles; Commander Russell F. Sanders, Williams Bay, Wis., course in pathology at the National Naval Medical Center, Bethesda, Md.; Commander Roger D. Sherman, Briarcliff Manor, N. Y., residency in psychiatry at the Naval Hospital in Philadelphia; Lieut. Richard B. Leander, St. Paul, course in psychiatry at the Pennsylvania Hospital in Philadelphia, and Lieutenant (jg) Peter W. Schneider, Laurel, Miss., residency in pediatrics at the Naval Hospital in Long Beach, Calif.

NEW REGULAR OFFICERS

The following naval medical officers have been accepted for transfer from the Naval Reserve to the Regular Navy: Lieut. (jg) David M. Butler, Provo, Utah; Lieut. (jg) John G. Esswein, New York; Lieut. (jg) John S. Neill, Valley Station, Ky., and Lieut. (jg) John M. Packard, Saranac Lake, N. Y.

PERSONALS

Cpts. Everett M. George and Robert B. Team and Lieut. Comdr. Julian M. Jordan, Medical Corps, now on the retired list, have volunteered to return to active duty and have been assigned.

Lieut. (jg) Jules H. Bogaev of the Naval Reserve has been ordered to active duty at Great Lakes, Ill.

Lieut. (jg) Harold A. Davis of San Diego, Calif., has gone on active duty at the Naval Hospital, San Diego, Calif., from an inactive Reserve status.

Capt. Francis D. Walker, M.C., Retired, of Brunswick, Maine, has returned to active duty at his own request and has been assigned to the Receiving Station, San Diego, Calif.

VETERANS ADMINISTRATION

RESIDENCIES IN PSYCHIATRY AVAILABLE

Residencies in psychiatry are available at the Veterans Administration Hospital, Gulfport, Miss. Training will be given at the hospital and in New Orleans under the supervision of Tulane University and Louisiana State University Schools of Medicine. The program will include didactic and clinical instruction in all phases of psychiatry and basic neurology, with experience in the techniques of treating neuropsychiatric adults and children. Applications should be addressed to Dr. H. W. Kostmayer, Chairman of the Combined Deans' Committee, Tulane University School of Medicine, New Orleans.

CONTRACTS FOR HOSPITALS

The contract for the construction by the Veterans Administration of a two hundred bed hospital at Grand Island, Neb., has been awarded on a low competitive bid of \$5,244,854.

The contract for the construction of a two hundred and fifty bed Veterans Administration hospital at Big Springs, Texas, has been awarded to the low bidder for \$5,712,739.

Contracts have been let for the general construction of the two hundred bed Veterans Administration general hospital at Fort Wayne, Ind., to the low bidder for \$4,682,500.

Contracts for the main construction work on the 1,000 bed hospital at Buffalo, N. Y., have been awarded, the successful bid being \$9,287,000 for the main building; the heating and ventilating contract was for \$1,334,497 in addition, and the plumbing contract \$1,297,344.

The contract for the mechanical construction of the four hundred and fifty bed general hospital at Shreveport, La., has been awarded to the lowest bidder for \$2,242,450.

MEETING OF ADVISORY BOARD

The next quarterly meeting of the Veterans Administration national advisory board, which is under the chairmanship of Dr. Charles W. Mayo, Rochester, Minn., will be in Washington, D. C., September 13. A recent appointment is that of Dr. Robert A. Kimbrough Jr., of Philadelphia, succeeding Dr. Paul Titus of Pittsburgh, who resigned.

PERSONALS

Dr. Horace B. Cupp, for a long time on the staff of the Johnson City, Tenn. veterans' hospital, has been named assistant medical director for the Southeastern Branch of the Veterans Administration, which supervises fifteen hospitals and six regional offices in the five Southeastern states. Dr. Cupp served in the Army in the recent war in command of the 63d Station Hospital in Australia and later as commanding officer of a hospital ship.

Dr. David E. Quinn, formerly manager of the veterans' hospital at Oteen, N. C., has assumed his new duties as medical director of the Northwest Branch of the Veterans Administration with headquarters at Seattle.

Dr. J. G. Bohorfoush has resigned as medical director of the Jefferson Tuberculosis Sanatorium, Birmingham, Ala., to accept a position with the Veterans Administration in Atlanta, Ga.

Dr. George S. Peters has resigned as chief of the Surgical Service at the veterans' hospital, Montgomery, Ala., and will enter private practice in that city.

Dr. Robert A. Houston, Sunbury, Pa., has been appointed chief of medical services of the veterans' hospital at Lebanon, Pa.

PUBLIC HEALTH SERVICE

COURSES IN LABORATORY DIAGNOSIS

The Public Health Service announces a second four weeks' course in the laboratory diagnosis of tuberculosis to be given November 15-December 10 at the Communicable Disease Center, in Atlanta. This course is open to all grades of employed laboratory personnel, although first consideration will be given to those from local and state public health service departments. A third six weeks' course on laboratory diagnosis of parasitic diseases will be given at the above address October 11-November 19. There are no tuition fees but travel and living expenses must be paid by the individual. Applications for the courses should be made as far in advance as possible to the Chief, Laboratory Division, Communicable Disease Center, 291 Peachtree Street, Atlanta, Georgia.

APPOINT DIRECTOR OF NATIONAL HEART INSTITUTE

Surgeon General Leonard A. Scheele announces the appointment of Dr. Cassius J. Van Slyke as Director of the National Heart Institute, under the general supervision of Assistant Surgeon General R. E. Dyer, Director of the National Institutes of Health. Dr. Van Slyke will be responsible to the Surgeon General for coordination of all heart disease activities in the Public Health Service. He will represent the Service in maintaining relations with professional societies, volunteer agencies and other civil groups interested in the heart disease program.

The National Heart Institute was created by an Act of Congress, which was approved by the President June 15, 1948. The law authorizes the Public Health Service to develop a program and promote the attack on cardiovascular diseases. The program will include research, financial aid to research institutions and training of professional personnel, fellowships for individual scientists and grants-in-aid and technical assistance to the states for the development of heart disease control services.

The National Heart Act also directs the appointment of a National Advisory Council to be composed of outstanding scien-

tists and clinicians in cardiovascular diseases and representatives of the public. The new Institute will have its headquarters at the National Institutes of Health, Bethesda, Md.

Dr. Van Slyke was graduated from the University of Minnesota Medical School and in 1932 was commissioned in the Regular Corps of the Service. One of his first assignments was investigation of encephalitis in St. Louis; from 1936 to 1944, he pursued a distinguished career of research at the Venereal Disease Laboratory of the Public Health Service at Stapleton, N. Y. In 1945, he was placed in charge of the Research Grants program of the National Institutes of Health. Dr. David E. Price, who succeeds Dr. Van Slyke as Chief of the Division of Research Grants and Fellowships, took his medical degree at the School of Medicine, University of California, and was commissioned in the Regular Corps of the Public Health Service. In 1947 he was made Chief, Cancer Grants Branch of the National Cancer Institute.

ADVISORY MENTAL HEALTH COUNCIL

The appointment of Dr. Leo H. Bartemeier, associate professor of psychiatry, Wayne University College of Medicine, Detroit, and Dr. Carlyle Jacobsen, Ph.D., dean of the graduate school, State University of Iowa, Iowa City, to the National Advisory Mental Health Council has been announced. They will succeed Dr. David M. Levy, New York, and Dr. Edward A. Strecker, Philadelphia, whose terms on the council expired on June 30. Dr. David Levy has been appointed to serve on the Research Study Section, an advisory body of the council; Dr. Grover F. Powers, professor of pediatrics, Yale University School of Medicine, New Haven, Conn., also has been appointed to the Research Study Section, replacing Dr. Charles A. Jancway, professor of pediatrics, Harvard Medical School, Boston, on the latter's resignation. The National Advisory Mental Health Council, comprising six leading scientific authorities, makes recommendations to the Surgeon General on matters relating to the activities of the U. S. Public Health Service in the field of mental health.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Goggans, Albert M.....Hissop
Lawrence, William E.....Mobile
Leavell, Ullin W. Jr.....Birmingham
Lumpkin, Hoyt G.....Boaz
Miller, Joseph B.....Mobile
Ray, Charles J.....Greenville
Simpson, Sam T.....Stevenson
Stanley, James F.....Enterprise

Arkansas

Baker, Clark M.....Maynard
Keeling, Jack H.....Jasper
Lambiotte, Louis O.....Ft. Smith
Wells, Travis L.....Monticello

California

Allan, John S.....Los Angeles
Erskine, John M.....San Francisco
Kim, Chang S. C.....Los Angeles
Krebs, David E.....Palisades
Kritzer, Morton D.....Los Angeles
McKeehan, Harold L.....Huntington Park
Oyster, Joseph M.....Coalinga
Pingree, Louis J.....Los Altos
Purdy, Ralph S. Jr.....San Francisco
Steadman, Monte G.....Los Angeles
Wagner, Clifford M.....Los Angeles

Colorado

Edwards, John A.....Denver
Eckhout, Gifford V.....Denver
Flanagan, Earl B. Jr.....Denver
Kicenski, Herman E.....Denver
Lowell, Edward J. Jr.....Denver
Redwine, Robert H.....Pueblo
Runley, Aaron S.....Fort Collins
Shields, Lorn M.....Denver
Tillotson, Frederick W.....Denver
Weiss, Joseph H.....Denver

Connecticut

Fitzgerald, Gerald P.....Winsted
Ganey, Joseph M. Jr.....Waterford
Lovallo, Frank.....Torrington
Lydon, Lawrence G. M.....New Haven
Piel, John J.....Salisbury
Scars, Bernard R.....Norwich
Swan, Bernard R.....Bridgeport

District of Columbia

Fitzgerald, Bernard A.....Washington
Greenbaum, Seymour.....Washington
Healy, Michel M.....Washington
Jaeger, Henry W.....Washington
McGovern, John P.....Washington
Pate, Charles V.....Washington
Walsh, James C. Jr.....Washington
Weaver, Ralph M. Jr.....Washington

Florida

Engle, Ralph L. Jr.....Coral Gables
Fletcher, Thomas B. Jr.....Greensboro
Horrell, Jonathan B.....Ocala
Lindner, John D.....Ocala
Newman, Jerome H.....Jacksonville
Prather, George W.....St. Petersburg
Thomas, Merrick D. Jr.....Miami

Georgia

Bedingfield, James A.....Caldwell
Brawner, Darnell L.....LaGrange
Camp, Benjamin L.....Ellisay
Inman, John S. Jr.....Albany
King, Harry C.....Tennille
Polk, Rothwell C.....Hapeville
Wall, Hilton F.....Atlanta

Illinois

Asche, Charles W.....Chicago
Branthaven, Charles A.....Chicago
Delong, Robert E.....Chicago
Evans, Frank F.....Chicago

Illinois—Continued

Fischer, Arthur R.....Berwyn
Fox, LeRoy J.....Maywood
Garrard, Sterling D.....La Salle
Giebelhausen, Gustav W.....Peoria
Gill, James P.....Joliet
Graham, Henry I.....Chicago
Herbert, Wayne I.....Chicago
Howland, Bernard F.....Sycamore
Jones, Robert C.....Henry
Litwiller, Raymond W.....Chicago
Kamencar, Harold R.....Chicago
King, Richard E.....Chicago
Kopsa, Walter J.....Cicero
McNeil, Gordon C.....Chicago
Middleton, William H.....Alton
Rovelstad, Randolph A.....Elgin
Sanneman, Everett H.....E. St. Louis
Stemerman, Irving.....Chicago
Streuter, Milton A.....Arenzville
Trobaugh, Frank E. Jr.....West Frankford
Weigen, John F.....Chicago
Zimmerman, Norval F.....Forest Park
Ziomek, Matthew J.....Chicago

Indiana

Alford, James A.....Garrett
Carter, Fred S.....Hammond
Ewing, Nathaniel D.....Vincennes
Hamilton, Charles O.....Selma
Miller, Wallace E.....Crawfordsville
Myers, Paul W.....Indianapolis
O'Shaughnessy, Robert P.....Lawrenceburg
Schmidt, Eugene E.....Huntington
Tasher, Dean C.....South Bend
Wagoner, James M.....Huntingburg
Zalac, Donald A.....Annapolis
Zavala, Dan.....Indianapolis

Iowa

George, Louis A.....Cherokee
Hyde, Robert W.....Elkader
Petersen, Robert E.....Davenport
Scars, Lewis N.....Davenport
Smith, Lloyd A. W.....Iowa
Taylor, James H.....Sheldon

Kentucky

Berning, Donald N.....S. Ft. Mitchell
Hess, Paul P.....Louisville
Holtzman, Alam M.....Louisville
Pierce, Gene S.....Louisville
Ramey, John R.....Sterling
Redd, Harold Jr.....Lexington
Richardson, George L.....Beech Creek

Louisiana

Faust, Jacob Jr.....New Orleans
Katz, Jerome B.....New Orleans
Rowlett, George S. Jr.....Shreveport
Sammons, Karl T.....New Orleans
Thomas, Albert M.....Monroe

Maryland

Goldberg, Raymond B.....Baltimore
Grumbine, Francis L.....Unionville
Kiefer, Robert A.....Catonsville
Milstead, Valgene M.....Indian Head
Queen, Joseph E.....Baltimore
Scherlis, Leonard.....Baltimore
Sloan, Herbert E.....Baltimore
Steinbach, Stanley R.....Baltimore
Traband, Millard T. Jr.....Baltimore

Massachusetts

Blahd, William H.....Brookline
Chamberlin, Harrie R.....Belmont
Desforges, Gerard.....Springfield
Evans, Sheridan S.....Cambridge
Ferris, Benjamin G. Jr.....Newton Center
Gilchrist, Bernard N.....Springfield
Guerrieri, George A.....Stockbridge
Hinchey, Thomas R.....Waltham

Massachusetts—Continued

Keigan, Archie G.....East Braintree
Killeca, Joseph H.....Worcester
Nash, Harold E. Jr.....Brookline
Portnoy, Nelson L.....New Bedford
Sullivan, Albert W.....Hadley Falls
Tobin, Lester H.....Lynn
Weinshel, Max.....Salem
Wheelock, Frank C. Jr.....Chestnut Hill
Wilson, Merton F.....South Hadley Falls

Michigan

Cintron-Rivera, Angel A.....Ann Arbor
Fairbanks, Eugene F.....Ann Arbor
Heldt, Richard F.....Detroit
Jaynes, Richard V.....Detroit
Kaufman, Jacob M.....Detroit
Kielhorn, Walter P.....Williamston
Little, Robert C.....Grosse Pointe
Sala, Walter R.....Norway
Smathers, Ward M.....Grand Rapids
Sprecher, Omer D. Jr.....Detroit
Stoeckle, Harry G. E. Jr.....Sturgis
Tremain, Harold L.....Detroit
Wagoner, Darwin E.....Detroit
Wilson, Norman R.....Jackson

Minnesota

Feigl, William M.....Minneapolis
Ferguson, Wilson J.....Rochester
Gillman, Louis.....St. Paul
Jensen, Louis C. Jr.....Minneapolis
Johnson, Richard J.....St. Paul
Knutson, Julian R. B.....St. Cloud
Lindell, Robert E.....St. Paul
Litin, Edward M.....Minneapolis
Lundsten, Leslie C.....Williams
McGeary, George D.....Minneapolis
Pallister, Philip D.....Rochester
Parent, Leslie M.....St. Paul
Peik, Donald J.....Browntown
Plasha, Matthew K.....Minneapolis
Soboloff, Hyman R.....Duluth

Mississippi

Dillard, Erin M.....Tupelo
Holland, Charles K. Jr.....Sunflower
Simmons, Calvin R.....Cleveland
Smith, Marvin D.....Clinton

Missouri

Canella, John M.....Hannibal
Capps, Samuel C.....Columbia
Collier, Frederick C.....St. Louis
Ellis, Francis J.....Springfield
Franklin, Harold A.....Clayton
Holt, Robert E. Jr.....St. Louis
Kennedy, Howard U.....Kansas City
King, James P.....St. Louis
Kowert, Edward H.....St. Louis
Johnson, William F.....Ozark
Lawrence, Fred E.....Clayton
Mayfield, James L.....Crystal City
Paul, John C.....Clinton
Pickett, John M.....Joplin
Roberts, John P.....St. Louis
Sandeen, Robert M.....St. Joseph
Schulz, Clarence G.....Charles
Shaw, William J. Jr.....Fayette

Montana

Botch, Edmund S.....Wibaux
Wiegenstein, John T.....Butte

Nebraska

Dodd, Robert B.....Fairbury
Knox, Walter E. III.....McCook
Nisley, Robert J.....North Platte
Phelps, Elbert T.....Lincoln
Pirruccello, Frank W.....Omaha
Rumbolz, William L.....Lincoln
Witham, Ray G.....Chappell
Worthman, Herbert W.....Louisville

PHYSICIANS SEPARATED FROM SERVICE

New Hampshire

Griffin, Samuel G. Portsmouth

New Jersey

Bashe, Winslow J. Jr. East Orange
Holland, Albert H. Jr. Morristown
Katz, Joel. Passaic
King, Jack A. C. Newton
Lewin, Leo. Dover
Lorentz, Gerald T. New Jersey
McCormack, Lloyd L. Linden
Neill, Mather H. Millburn
Palmer, Solon Jr. Montclair
Pasquariello, Peter J. Paterson
Quay, Robert M. Orange
Recht, John M. Long Branch
Rose, Francis L. Haddon Field
Weiss, Mortimer. Newark
Wild, Eugene L. Paterson
Yazujian, Haig D. Trenton

New Mexico

Medler, David C. Albuquerque
Swayze, Victor W. Farmington

New York

Beckmann, Albert J. Lynbrook
Farrell, Joseph M. New York
Frank, Charles W. Woodmere
Gallagher, Daniel E. North Tarrytown
Gilmore, Harry L. Jr. Syracuse
Green, George G. Brooklyn
Grieco, Rito V. New York
Gruen, John G. Brooklyn
Hansen, Aage V. Jr. Jackson Hts.
Healey, Patrick F. Glens Falls
Henriksen, Einar. Albans, L. I.
Honig, Lester J. Bronx
Humphrey, Harvey A. Lowville
Jaretzki, Alfred III. New York
Kaftan, Sheldon H. New York
Kastl, William H. Bronx
Keating, John H. Jr. New York
Kellogg, Robert O. Jr. New York
King, David G. Brooklyn
Kryle, Lawrence S. New York
Linker, Matthew H. New York
Lopresti, Joseph M. Corona
Losce, Ronald E. Red Hook
Marano, Anthony J. Buffalo
Mattman, Paul E. New York
Mayberger, Harold W. Astoria, L. I.
McIntosh, William N. Buffalo
Meyer, Franklin. Buffalo
Nelson, William P. III. New York
Nims, Robert G. Bronxville
O'Brien, Donald J. Syracuse
O'Gorman, Kevin M. Buffalo
Ott, Roy H. Jr. White Plains
Pachter, Cyrus H. New York
Peabody, Homer D. Jr. West Hempstead
Pollinger, Paul L. New York
Ray, Vincent R. Corona, Queens
Richards, Robert A. Baldwin
Rosenbaum, Meyer. Bronx
Roston, Edward H. Hewlett
Rubin, Cyrus E. Brooklyn
Ruckert, Gustave T. III. Rochester
Sarason, Ernest L. New York
Shapiro, Daniel M. Brooklyn
Shelmandine, Robert J. Schoharie
Troiano, Rocco F. Yonkers
Ward, Chester D. East Aurora
Weisshaus, Stanley Z. New York
Wichman, Adolph R. Floral Park
Williams, John R. Buffalo
Wood, Frederick W. Jr. Garden City
Wyatt, Clarence A. Jr. Albany

North Carolina

Bruton, Charles W. Mt. Gilcard
Burroughs, Gerald W. Charlotte
Garrison, Robert L. Lincolnton
Gross, Frank B. Jr. Winston-Salem
Jones, Beverly N. Jr. Winston-Salem
Rendieman, David A. Jr. Salisbury
Stroup, Matthew A. Jr. Cherryville

Ohio

Ebert, Paul W. Wadsworth
Ebert, Ray E. New Holland
Houser, John F. Versailles
Kagay, Charles L. Columbus
Keagy, Charles L. Canton
Klein, Michael. Cleveland
Mackey, Francis G. Columbus
Ott, John F. Cincinnati
Pfister, Glenn W. Jr. Cincinnati
Poneman, Harold A. Toledo
Riepenhoff, John P. Columbus
Rogers, William B. Jr. Akron
Scott, Murray W. Jr. Canton
Seiwert, Vincent J. Cincinnati
Slinger, William N. Massillon
Solomon, Earl G. Cincinnati
Stanley, Earl H. Albany
Stoneburner, Lawson W. Wooster
Talbot, Thomas J. Lima
Westhafer, Henry N. Urichsville
Winterhoff, Ernest H. St. Clairsville
Zullinger, James W. Lima

Oklahoma

Dennis, Robert P. Oklahoma City
Guild, Carl H. Jr. Shidler

Oregon

Bercu, Bernard A. Portland
Childs, Robert T. Portland
Heinemann, Mitchell W. Jr. Portland
Rosenberg, Alan J. Portland
Versteeg, Charles N. Portland

Pennsylvania

Bauer, Richard D. Philadelphia
Brecher, Eugene. Philadelphia
Dickey, Robert L. Philadelphia
Eister, Donald H. Sunbury
Epstein, Nathan. Philadelphia
Gair, Lynn E. Dunbar
Gay, Francis H. Coatesville
Gerson, Theodore F. Philadelphia
Gilberti, Michael V. Aliquippa
Grancey, Robert J. Forty-Fort
Hertzog, Frank V. Bethlehem
Howrie, William C. Jr. Philadelphia
Jeffrey, Robert B. Uniontown
Kendrick, Oliver R. Duquesne
Kenig, Isador J. Harrisburgh
Kerr, Robert M. Wilkes-Barre
Lang, Warren R. Philadelphia
Lawrence, James B. Shamokin
Levinisky, Walter J. Meadville
Lippi, Frank A. Jr. Philadelphia
McAllister, Robert M. Yeadon
McGavin, Thomas A. Wyomissing
McStravog, Lawrence J. Philadelphia
Magee, Richard B. Altoona
Matti, Frank A. Philadelphia
Millington, George H. Philadelphia
Miller, William H. Drexel Hill
Moore, Richard D. West Chester
Moylan, Joseph E. Scranton
Mugrave, Ross H. Baden
Olash, Felix A. Luzerne
O'Neal, Alexander H. Jr. St. Davids
Packer, Lawrence L. Jr. Lock Haven
Polevoy, Pomeroy E. Philadelphia
Rabe, Edward F. Milton
Reganis, John C. Girardville
Richards, Robert N. Glenolden
Rozanski, Stanley J. Plymouth
Ryan, Eugene J. Pottsville
Sanner, John C. Scranton
Santore, Felice J. Philadelphia
Short, William J. Port Royal
Shuman, Charles R. Gettysburg
Silverberg, Jay H. Pittsburgh
Snively, George G. Wayneboro
Stout, William J. Philadelphia
Torney, John G. Philadelphia
Tyson, Robert G. Pittsburgh
Tyson, Russell R. Jr. Pottstown
Unterberger, Herbert. Edwardsville

South Carolina

Deloach, James F. Aiken
Dickert, Elbert J. Jr. Newberry
Gibbons, Julius J. Jr. Wilson
Huff, Frank R. Charleston
Montgomery, Benton M. Jr. Kingstree
Taylor, Lewis H. Jr. Laurens
Watson, Walter G. Trenton
Williams, Arthur W. Jr. Charleston
Wooten, Ernest L. Camden

South Dakota

Froemming, William E. Sioux Falls
Petsch, Kenneth R. Wentworth

Tennessee

Hall, James W. Trenton
Hammonds, Roy G. Nashville
Jackson, Harold P. Sewanee
Jernigan, Thomas P. III. Paris
Luton, Edgar F. Memphis
O'Hearne, John J. Jr. Memphis
Orman, Joseph C. Memphis
Rayl, John E. Jackson
Short, Dennis W. Sr. Nashville

Texas

Fallon, Robert J. Houston
Frank, Thomas V. Burlington
Gates, Philip A. Dallas
Herbert, Joseph W. Houston
Jones, Reed W. Denison
Kearney, William W. El Paso
Robinson, James T. Jr. Dallas

Utah

Barker, Earl S. Salt Lake City
Grua, Oscar E. II. Salt Lake City
Haynes, Howard H. Jr. Salt Lake City

Virginia

Caudill, Carrel M. Pearisburg
Horsley, Thomas M. Lovington
Hurdle, Thomas G. Roanoke
Lang, Carl M. Charlottesville
Moorman, Warren L. Jr. Salem
Poe, William D. Roanoke
Russell, Edward K. Abingdon
Salisbury, Robert S. Richmond
Sease, Cyril I. Jr. Richmond
Snodgrass, Harold W. Glade Spring
Wilson, John K. Richmond

Washington

Gabrielson, Mark L. Seattle
Garvin, James E. Seattle
Pitchford, Clyde A. Jr. Aberdeen
Sloan, William H. Seattle
Rubty, Robert H. Mabton
Turnbull, Lawrence F. Olympia

West Virginia

Hufschmitt, Joseph R. Wheeling
Margolis, George. Montgomery
Point, Walter W. III. Charleston
Robinson, William H. Morgantown
Tidler, James. Clarksburg

Wisconsin

Kinkade, Byron R. St. Croix Falls
O'Connell, James R. Milwaukee
Rice, Thomas J. Ontario
Rowe, George G. Dodgeville
Ruppa, Rex. Milwaukee
Schmitz, John T. Sparta
Slotnik, Irvin L. Milwaukee
Wolf, William A. Appleton

Hawaii

Tomita, T. T. Odhu Territory of Hawaii

Canal Zone

Judson, Walter E. Balboa Heights

Central America

Roman-Vega, Desiderio A. Jiuotepe

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

International College of Surgeons.—The Alabama section of the International College of Surgeons will meet in Birmingham, September 30, in conjunction with the Jefferson County Medical Society and the Southern Research Institute at the Jefferson-Hillman Auditorium. Guest speakers include:

Herbert Acuff, Knoxville, Tenn., Future of Isotopes in Medicine and Surgery.

F. Bayard Carter, Durham, N. C., Endometriosis.

J. Barrett Brown, St. Louis, Management of Facial Injuries.

Albert A. Berg, New York.

Allen F. Voshell, Baltimore, Orthopedics.

Edgar W. Davis, Washington, D. C., Intrapulmonary Tumors.

At the Wednesday evening session, Dr. William Dameshek, Boston, will discuss leukemia. Members of the Alabama State Medical Society are especially invited to this meeting.

CALIFORNIA

New Psychiatric Clinic.—The Berkeley State Mental Hygiene Clinic, associated with the University of California, which has opened temporary quarters in the Cowell Hospital, is part of the State Department of Mental Hygiene and is financed by funds provided under the National Mental Health Act. The clinic is under the direction of Dr. Portia Bell Hume.

Cancer Research Grants.—Five research projects at the University of California, Berkeley, are to be supported by a \$21,364 grant from the American Cancer Society. The research, which will be directed toward learning the cause of cancer, is being carried on by Dr. Herbert M. Evans, director of the Institute of Experimental Biology, David M. Greenberg, Ph.D., professor of biochemistry, Paul L. Kirk, Ph.D., professor of biochemistry, and Harold Tarver, Ph.D., assistant professor of biochemistry.

Dr. Addis Honored.—The May issue of the *Stanford Medical Bulletin* is dedicated to Dr. Thomas Addis, professor of medicine emeritus at Stanford University School of Medicine, and contains thirty-two articles by associates, students and fellow workers in the field of renal disease. Dr. Addis is a former Carnegie Research scholar and fellow, and in 1942 was awarded the Cullen Prize by the Royal College of Physicians in Edinburgh. He had been a member of the faculty at Stanford University School of Medicine since 1911.

ILLINOIS

Civil Service Positions Open.—The Illinois Civil Service Commission announces eighteen examinations for physicians, nurses, dentists and health educators. Appointments to be filled include positions in welfare hospitals and schools throughout the state, and in various divisions and field offices in the department of public health. State residence requirements are waived for most of these examinations. September 25 is the final date for applying. These examinations, carrying eligibility for permanent civil service appointments, will be held October 16 and 23. Official application forms and more detailed information may be obtained from the Illinois Civil Service Commission, Armory Building, Springfield.

Postgraduate Conference in Harrisburg.—The Postgraduate Education Committee of the Illinois State Medical Society will sponsor a postgraduate conference at the Harrisburg Country Club, Harrisburg, September 22, with the Saline County Medical Society acting as host. The conference will open with a luncheon, after which the following speakers will participate:

Oswald P. J. Falk, St. Louis, Management of Cardiovascular Problems.

Ransom R. Buchholz, Evansville, Ind., Congenital Diseases of the Newborn.

Danely P. Slaughter, Chicago, Office Diagnosis of Accessible Cancer.

Samuel J. Taub, Chicago, Diagnosis and Treatment of Asthma.

Noel G. Shaw, Evanston, The Rh Factor in the Newborn.

F. Garm Norbury, Jacksonville, Acute Infections of the Nervous System.

A round table discussion and social hour will conclude the afternoon's program. At the dinner Dr. Richard K. Gilchrist, Chicago, will speak on "Surgery of the Colon from the General Practitioner's Standpoint."

Chicago

Dr. Kordenat Goes to Texas.—Dr. Ralph A. Kordenat, formerly associate professor of surgery with the University of Illinois College of Medicine, Chicago, has been appointed to the medical staff, Dallas, Texas, branch office of the Veterans Administration, and will assist in the supervision of the Veterans Administration surgical service in Texas, Louisiana and Mississippi hospitals with permanent headquarters in Dallas. Dr. Kordenat was graduated from the University of Illinois College of Medicine in 1922 and did postgraduate work in London and Berlin. He is one of the founders of the American Board of Surgery. He served during World War I in the U. S. Army and during World War II was vice chairman of the Procurement and Assignment Service for Physicians in Illinois.

Public Lectures on Nutrition.—The second annual public meeting on nutrition, sponsored by the Chicago Medical Society and cooperating organizations, will be held at the John B. Murphy Memorial Amphitheater, Chicago, October 13-14. Speakers include:

John P. O'Neil, Chicago, The Wedding of the Sciences in Human Nutrition.

Ira Allison, Springfield, Mo., Undulant Fever.

William H. Schrell Jr., Bethesda, Md., A National Public Health Nutrition Program.

Thelma E. Porter, Ph.D., Chicago, Your Dollar and Your Diet.

Icie Macy Hoobler, Ph.D., Detroit, Maternal Nutrition and Child Health.

William J. Darby, Nashville, Tenn., Obesity.

Ansel B. Keys, Ph.D., Minneapolis, Caloric Nutrition.

Christian P. Segard, Leonia, N. J., Fat Free Certified Milk.

Herman N. Bundesen, Chicago, Public Health and Food.

A round table discussion with questions from the floor will take place each afternoon.

LOUISIANA

Appoint President of State Board.—Dr. William V. Garnier, Bastrop, has assumed his duties as president of the state board of health, succeeding Dr. Waldo L. Treuting, who was appointed professor of public health administration at Tulane University of Louisiana School of Medicine, New Orleans, effective July 1. Dr. Garnier is a graduate of Tulane, 1925. Dr. Treuting, a graduate of Tulane, 1934, has served in the health department as president since July 1946.

MINNESOTA

General Practitioner Honored.—The University of Minnesota Medical School recently presented an "Outstanding Achievement" medal to Dr. William W. Will of Bertha at an alumni dinner in Minneapolis. Dr. Will was also recently named by the state medical association for the American Medical Association outstanding general practitioner award.

Course in Tuberculosis.—Tuberculosis and other diseases of the chest will be reviewed in a three day course for general practitioners at the University of Minnesota Center for Continuation Study, Minneapolis, October 18-20. The course is sponsored by the American Trudeau Society, the University of Minnesota, Minneapolis, and the state and county Christmas Seal organizations.

MISSOURI

Clinical Conference.—The Fall Clinical Conference of the Kansas City Southwest Clinical Society will be held in the Municipal Auditorium, Kansas City, October 4-7. Guest speakers include:

William H. Amspacher, Washington, Utilization of Medical Corps Officers in the United States Army.

Ignacio Chavez, Mexico City, Mexico, Coronary Heart Disease.

Willard R. Cooke, Galveston, Texas, Rationalism in Regard to Gynecologic Operations.

George Crile Jr., Cleveland, Treatment of Peritonitis and Intra-Abdominal Abscess.

William Dameshek, Boston, Diagnosis of Anemia.

R. Arnold Griswold, Louisville, Ky., Treatment of Traumatic Wounds of Soft Tissues.

Howard T. Karsner, Cleveland, Acute Inflammations of Arteries.

L. Chester McHenry, Oklahoma City, Perforation of the Esophagus.

Samuel F. Marshall, Boston, Gastric Surgery for Peptic Ulcer.

Earl R. Miller, San Francisco, Use of Radioactive Iodine in Medicine.

Ralph V. Platou, New Orleans, Penicillin Therapy of Congenital Syphilis.

Herbert L. Pugh, Washington, D. C., Ideas for Future Use of the Medical Profession in a National Emergency.

Richard G. Scobee, St. Louis, The Doctor and the Cross-Eyed Child.

William A. Sodeman, New Orleans, Fever of Undetermined Origin.

James E. M. Thomson, Lincoln, Neb., What Fractures to Treat and What Fractures to Refer.

John B. Wear, Madison, Wis., Hydronephrosis — Symptoms and Diagnosis.

Daily round table luncheons will be held in medicine and surgery. Both scientific and technical exhibits will be on display.

NEBRASKA

Society of Anesthesiologists.—At a meeting in Omaha, May 12, the Nebraska Society of Anesthesiologists, a component member of the American Society of Anesthesiologists, Inc., was founded. Officers elected were: Dr. Dorothy Thompson, Omaha, president, and Dr. Kenneth E. Latterell, Omaha, secretary-treasurer.

Brigadier General Carroll Appointed Dean.—On September 1, Dr. Percy J. Carroll, St. Louis, retired brigadier general, will become dean of Creighton University School of Medicine, Omaha, and chief of staff at Creighton Memorial-St. Joseph's Hospital. He will hold the rank of professor of preventive medicine. He was appointed dean and professor of public health at the St. Louis University School of Medicine in 1946. During World War II he was commandant of the Army Medical Center of Manila and later Chief Surgeon of the Southwest Pacific Theater of Operations and the Far East. He received the Distinguished Service Medal for his work in evacuating the wounded from Manila. In 1944 he returned to the United States and assumed command of Vaughn General Hospital, Hines, Ill. He retired from the army in 1946.

NEW YORK

Personal.—Dr. John R. Williams, Rochester, on July 7 received Rochester's Museum 1948 Weisenbeck Memorial Award for his work in encouraging interest in hobbies in Rochester. Dr. Robert H. Broad, Binghamton health officer, was elected president of the New York State Association of Health Officers at its annual meeting in Saratoga Springs in July.

Appoint Deputy Health Commissioner.—Dr. Hollis S. Ingraham, director of the division of communicable diseases of the state department of health, has been named deputy commissioner. The present deputy commissioner, Dr. William A. Brumfield Jr., will become first deputy. Dr. Ingraham's position was added because of the department's expanding program.

Board of Arbitration.—The Oneida County Medical Society has approved the appointment of a medical board of arbitration to which insurance companies may submit physicians' bills which they believe to be excessive. The move was the result of sharp increases in automobile liability insurance rates recently effective in the area. The panel is made up of ten physicians. The medical society is reported to have appointed a committee to study the situation and make recommendations to the society. The society also plans to appoint a panel of physicians who will handle emergency calls relayed to them from police through the doctors' telephone exchanges.

Canandaigua Hospital Joins Medical Center.—Under an agreement reached by the officials of the Veterans Administration and the University of Rochester School of Medicine and Dentistry, the Canandaigua Veterans Administration Hospital becomes part of the university's Strong Memorial Hospital medical center. As a center of neuropsychiatric research, the Rochester hospital will aid the veterans' facility. A committee has been named to work out the details of the relationship: Dr. John Romano, professor of psychiatry, chairman; Dr. William S. McCann, professor of medicine; Dr. Paul H. Garvey, associate professor of medicine in neurology; Drs. Nils B. Hersloff and Edwin M. Levy, of the Canandaigua institution. The affiliation will also make it possible for the Veterans Administration patients to receive surgical treatment now unavailable.

New York City

Dr. Cissel Director of Surgery.—Dr. Benjamin M. Cissel, professor of clinical surgery at Long Island College of Medicine, has been named director of surgery of the college division at Kings County Hospital. His appointment fills the vacancy created by the recent promotion of Dr. E. Jefferson Browder to full professor and head of the department of surgery at the medical school.

Brooklyn "Healthmobile."—The Brooklyn Tuberculosis and Health Association has purchased a "healthmobile" for an information center and chest x-ray unit on wheels, as part of its drive to reduce tuberculosis in Brooklyn. Citizens of the borough may receive free tuberculosis information and roentgenograms for \$1. According to the *New York Times*, Everett M. Clark, president of the association, said that 15 persons died weekly in Brooklyn from tuberculosis and that there were almost 2,000 new cases each year. The association took some 38,000 roentgenograms of the chest last year.

Foreign Language Press Committee.—Dr. Kendall Emerson, president, New York Tuberculosis and Health Association, has announced the formation of a foreign language press committee to aid the association in its public relations pro-

gram. The new group will be headed by Sigmund Gottlober, director of the American Foreign Language Press, 258 Fifth Avenue. Dr. Herbert R. Edwards, executive director, New York Tuberculosis and Health Association, and Frederick Hodgson, public relations director, will serve as ex officio members. The committee, Dr. Emerson said, will be a continuing body functioning not only in fund raising but in carrying on year-round work on behalf of health education, tuberculosis case finding and rehabilitation.

OHIO

Postgraduate Seminars.—The committee on education of the Ohio State Medical Association will present three practical postgraduate seminars this fall: October 21, Elks Home, Chillicothe, "New Advances in Diagnosis and Treatment of Chest Diseases"; October 27, American Legion Hall, Lima, "Practical Cardiology"; November 3, Mansfield-Leland Hotel, Mansfield, "Practical Dermatology."

Anesthesiologists' Meeting.—The American Society of Anesthesiologists will hold a joint meeting with the Ohio Society of Anesthesiologists, October 1-2, at the Hotel Commodore-Perry, Toledo. Out of state speakers include: Drs. Robert A. Hingston, Memphis, Tenn., who will speak on "Hypospay"; John Adriani, New Orleans, "Practical Aspects of Chemistry of Anesthetic Drugs"; H. Boyd Stewart, Tulsa, Okla., "Practice of Anesthesiology," and Ivan B. Taylor, Detroit, "Intravenous Procaine." On Saturday a panel on cyclopropane will be held.

OKLAHOMA

Postgraduate Circuits.—The eighth and next to the last circuit in the two year postgraduate course in gynecology is under way in Oklahoma. Instructor for the Oklahoma State Medical Association sponsored postgraduate instruction is Dr. Joseph R. B. Branch, Macon, Ga. The next postgraduate instruction will begin shortly after Jan. 1, 1949, and will be in internal medicine.

Association Awards Fifty Year Pins.—All members of the Oklahoma State Medical Association who have been in active practice in excess of fifty years are being presented fifty year pins. The first twelve pins were presented at the annual meeting in May, and four more have been presented since that time to others of the twenty-six society members now eligible to receive the award. Special county society meetings are scheduled for the next few months to present the remaining pins. Dr. Clarence E. Northcutt, Ponca City, president of the Oklahoma State Medical Association, or councilors of the association will make the presentations.

PENNSYLVANIA

Emergency Service Setup.—Through Dr. Richard C. Kaar, president of the Milton Board of Health, a survey is being made of all local physicians to obtain their hours and file them with the Borough Police to provide an emergency roster.

Graduate Education Institute Begins.—Beginning this month, the second annual program of the Graduate Education Institute of the state medical society will be carried on in ten centers throughout the state to carry medical education to practicing physicians in rural areas. Teaching centers have been set up in Oil City, Johnstown, Williamsport, Harrisburg, Wilkes-Barre, Allentown, Erie, Washington, Clearfield and Lancaster. More than 1,000 doctors, chiefly from rural areas, will register for the season's course. Last year total registration was 850. Beginning in the fourth week of September, eight hours of intensive medical education will be presented each week in each center for a period of five weeks. In April the second half of the course will be given, making ten full days or eighty hours of class room lectures. The faculty will include 216 teachers from the University of Pennsylvania School of Medicine, Jefferson Medical College of Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, Temple University School of Medicine, Woman's Medical College of Pennsylvania, all of Philadelphia, and the University of Pittsburgh School of Medicine. This year the three days of instruction will feature diseases of infants and children. There will also be a day of lecturing on the general practice of medicine with some attention given to the application of radioactive substances in the treating of disease. Lectures begin on September 21 in Allentown, September 22 in Erie, Lancaster, Oil City, Washington, Wilkes-Barre and Williamsport, and September 23 in Clearfield, Harrisburg and Johnstown. The schedules are so arranged that if a doctor misses one session at the center nearest his home he can attend an identical session in a neighboring center on another date.

Philadelphia

Personal.—The King Christian X Medal of Liberation, Denmark, has been awarded to Bernard Spur, Ph.D., of the Children's Hospital of Philadelphia, in acknowledgment of his wartime aid to Danish children in Greenland.

Honored by the British.—Alfred N. Richards, LL.D., professor emeritus of pharmacology, University of Pennsylvania School of Medicine, who retired July 1 as vice president in charge of medical affairs, and Detlev W. Bronk, Sc.D., medical director of the Johnson Foundation and professor of biophysics at the university, were decorated with the Order of the British Empire at ceremonies at the British Embassy, Washington, D. C. Dr. Richards was decorated for his leadership as chairman of the Committee on Medical Research of the Office of Scientific Research and Development. Dr. Bronk received the honor "in recognition of his many outstanding contributions to the allied war effort." Dr. Harold G. Scheie, assistant professor of ophthalmology, and Dr. Henry C. Bazett, professor of physiology at the university, received the same decoration on earlier dates.

TENNESSEE

First Regional Postgraduate Medical Assembly.—The Nashville Academy of Medicine will conduct its first regional Postgraduate Medical Assembly in Nashville, October 6-7, for the benefit of all physicians in Tennessee and adjacent states. Twelve out of state essayists will discuss obstetrics, eye, ear, nose and throat, orthopedics, urology, plastic surgery, antibiotics, anemias, endocrinology, gynecology and radiology. Credit may be had by members of the American Academy of General Practice for attendance at this assembly. Reservations may be secured at the Andrew Jackson and Hermitage hotels.

Dr. Wilson Appointed Professor of Surgery.—Dr. Harwell Wilson was recently appointed professor and chief of the division of surgery at the University of Tennessee College of Medicine, Memphis. He received his M.D. degree at Vanderbilt University School of Medicine, Nashville, 1932, and took graduate training at the University of Chicago. In 1939 he entered practice in Memphis, and since then has been a member of the faculty of the university. Dr. Wilson entered the military service as a major with the Vanderbilt University General Hospital Unit; later, as a lieutenant colonel, he served as chief of surgery of an overseas hospital in the Mediterranean theater of operations and was then assigned to the consultants' division there. At the time of his discharge from the army he was assigned to the Consultants' Division of the Surgeon General's Office.

WEST VIRGINIA

District Health Conferences.—The annual Northern District Health Conference sponsored by the state department of health will be held October 8 at the Fairmont Hotel, Fairmont. The Southern District Conference is scheduled for October 15, at the West Virginian Hotel, Bluefield. The two meetings will be open to the public.

Ophthalmologists' Meeting.—The fall meeting of the West Virginia Academy of Ophthalmology and Otolaryngology will be held at the Greenbrier, White Sulphur Springs, September 20-21. Dr. James A. Moore, New York, will speak on "Endaural Surgery in the Modified Radical and Radical Mastoidectomies," and Dr. Oscar B. Nugent, Chicago, on "Management of Strabismus."

Emotional Aspects of Disease.—A psychiatric seminar, sponsored by the bureau of mental hygiene of the state health department and the mental hygiene committee of the West Virginia State Medical Association, will be held at St. Mary's Hospital Nurses Home, Huntington, October 6-7. Emotional aspects of the various diseases will be stressed. Clinics on the common neurologic problems are being arranged. Guest speakers include:

- Robert H. Felix, Washington, D. C., What Mental Hygiene Program Means to West Virginia.
- Oscar C. E. Hansen-Pruss, Durham, N. C., Asthma, Bronchitis and Hay Fever: Psychological Aspects and Treatment.
- Frederick G. Dersheimer, Wilmington, Del., Emotional Factors in Industry.
- R. Finley Gayle, Richmond, Va., Modern Methods of Treatment in Mental Institutions.
- William G. Hamm, Atlanta, Ga., Psychiatric Aspects of Plastic Surgery.
- Yale D. Koskoff, Pittsburgh, Clinic on Neuropsychiatric Problems.
- Robert M. Creadick, Durham, N. C., Menstrual Disorders.
- Ray O. Noojin, Birmingham, Ala., Psychologic Factors in Common Skin Diseases.

At the round table luncheon Wednesday on "The Use of Community Resources in the Handling of the Psychiatric Office Patient," Dr. Theron S. Hill, Memphis, Tenn., will speak. Guest speaker at the Wednesday reception and dinner will be Dr. C. Charles Burlingame, Hartford, Conn.

HAWAII

Mainland Visitors.—Dr. George P. Guibor, Chicago, arrived in Honolulu August 15 to give an advanced course in eye surgery with special reference to the treatment of muscle defects. Chauncey D. Leake, Ph.D., vice president of the University of Texas and dean of the university's medical school, Galveston, spoke before public meetings on September 7 and 8 in Honolulu.

Pacific Surgeons' Meeting.—Over one hundred surgeons representing every field of surgery gathered in Honolulu at Queens Hospital and the Mabel Smyth Building for the Fourth Congress of the Pan-Pacific Surgical Association, August 30-September 13. This is the first meeting of the organization since 1939 and is the largest held since the association was founded in 1929 under the auspices of the Pan-Pacific Union. The officers of the 1948 Pan-Pacific Surgical Conference are Dr. Frederick L. Reichert, San Francisco, president, and Dr. Forrest J. Pinkerton, Honolulu, Hawaii, secretary-treasurer.

GENERAL

Announce Essay Prize.—The South Atlantic Association of Obstetricians and Gynecologists announces the establishment of the Foundation Prize. Authors on papers on obstetric or gynecologic subjects desiring to compete for the prize may obtain information from Dr. Emmett D. Colvin, Secretary-Treasurer, 1259 Clifton Road, N.E., Atlanta, Ga.

Cancer Fund.—Establishment of the Babe Ruth Cancer Fund with the contribution of \$100,000 by the Revere Camera Company of Chicago has been made with the American Cancer Society for general research and for use at the society's discretion. Arrangements are being made to present the check for \$100,000 to the American Cancer Society in New York.

Tropical Medicine Awards.—At the Fourth International Congress on Malaria, Colonel Henry E. Shortt, London School of Hygiene and Tropical Medicine, was awarded the Lavan Priz for his paper "The Pre-Erythrocytic Cycle of Plasmodium cynomolgi." The Walter Reed Medal was presented to Dr. Nicolaas H. Swellengrebel, Amsterdam, Netherlands, for his researches in the field of tropical medicine, particularly in the epidemiology and control of malaria.

Kilmer Prize Award.—A system for identifying drugs from the botanical world by their fluorescent glow when exposed to invisible, near ultraviolet rays has gained the Kilmer Prize for Charles R. Chase, Jr., of Stockton, Calif. Mr. Chase was presented with an inscribed gold key by the American Pharmaceutical Association at its national convention in San Francisco last month. Mr. Chase conducted his research while a student at the University of California College of Pharmacy, San Francisco.

Society Elections.—Recently elected officers of the National Federation of Obstetric-Gynecologic Societies include: Dr. Ralph E. Campbell, Madison, Wis., president; Dr. Edward C. Hughes, Syracuse, N. Y., president elect; Dr. Woodard D. Beacham, New Orleans, secretary, and Dr. Richard Paddock, St. Louis, treasurer. At the annual meeting of the American Association of the History of Medicine in Philadelphia, in May, Dr. Henry R. Viets, Boston, was elected president, and Dr. Benjamin Spector, Boston, secretary. The American Medical Women's Association recently installed Dr. Elsie S. L'Esperance, New York, as president, and chose Dr. Dorothy W. Atkinson, San Francisco, as president elect; Dr. Isabel M. Scharnagel, New York, corresponding secretary, and Dr. Mary R. Noble, Bowmansdale, Pa., treasurer.

Reprints on the Lead Problem.—The Lead Industries Association, New York, has published a booklet combining reprints of three papers on the important aspects of health control in industrial lead workers. Dr. William C. Wilentz, medical director, Perth Amboy, N. J., Plant, National Lead Company, discusses the employer, employee and community factors of the problem. Dr. Lloyd E. Hamlin, medical director, and Herbert J. Weber, industrial hygienist, American Brake Shoe Company, Chicago, discuss the medical and engineering aspects of prevention of lead intoxication among brass foundry workers. Copies may be obtained from the Lead Industries Association, 420 Lexington Avenue, New York 17, at 50 cents each.

Fellowship Awards.—Three fellowships in medical research have been announced by the John Simon Guggenheim Memorial Foundation. The recipients are: Dr. Henry Shepard Fuller, assistant professor of preventive medicine, Bowman Gray School of Medicine, Winston-Salem, N. C.; studies of the taxonomy and distribution of mites, in relation to their transmission of diseases; Dr. James Mather Sprague, assistant professor of anatomy, Johns Hopkins University School of Medicine, Baltimore;

studies of the anatomic organization of the spinal motor system, and Dr. Doris Hawkins Phelps, research associate in obstetrics and gynecology, Vanderbilt University School of Medicine, Nashville, Tenn.: studies in reproductive and gynecologic physiology. Dr. Phelps will work at the University of Witwatersrand, Johannesburg, South Africa. The awards are a part of the twenty-fourth annual series of fellowship awards made by the foundation, established in 1925 by the late U. S. Senator Simon Guggenheim and his wife as a memorial to their son.

Subcommittee on Oncology.—The committee on pathology of the National Research Council has appointed the following subcommittee on oncology: Dr. Shields Warren, Boston, chairman; Dr. Balduin Lucké, Philadelphia; Dr. Fred W. Stewart, New York; Dr. Harold L. Stewart, Bethesda, Md.; Dr. Arthur P. Stout, New York; Dr. Milton C. Winternitz, New Haven, Conn., and Dr. Howard T. Karsner, Cleveland, chairman of committee on pathology, ex officio. Brig. Gen. Raymond O. Dart, director of the Army Institute of Pathology, is cooperating with the committee, making the institute's facilities and resources available and providing office space for the permanent secretary. The objectives of the subcommittee are: (1) improvement in the teaching of oncology; (2) dissemination of information on oncology; (3) establishment of criteria for diagnosis of tumors, and (4) simplification of terminology by recommending a single term for each tumor and listing separately the appropriate synonyms.

End Pollution of Ohio Watershed.—After thirteen years of negotiations, governors of seven states and a representative of another on June 30 signed a compact establishing a joint authority to prevent pollution of streams of the Ohio river valley. The action is intended to bring purer water to some 20,000,000 persons in a 200,000 square mile area in Indiana, West Virginia, Ohio, New York, Illinois, Kentucky, Pennsylvania and Virginia. Sewage disposal plants will be the main agency used. A compact commission, consisting of three commissioners from each state and three representing the federal government, will draft plans for administering the agreement. The lately enacted Barkley-Taft antistream pollution measure will provide for construction of a stream sanitation laboratory in Cincinnati to cost \$4,000,000 and \$20,000,000 for loans to communities for establishment of sewage disposal plants.

Baruch Committee Report.—The annual report of the Baruch Committee on Physical Medicine states that about 150 communities in the nation have or are planning civilian rehabilitation programs, as compared with a few limited facilities in physical medicine and medical rehabilitation prior to the war, and that from five approved residencies or fellowships in physical medicine available annually in three medical centers, the number has grown to seventy such residencies and fellowships now available in thirty-four medical centers. Compared to thirty medical schools then offering instruction in physical medicine, there are now sixty. Since the establishment of the committee physical medicine has become the sixteenth officially recognized medical specialty. Of the original allocation of \$1,250,000, sums totaling \$900,000 were given to Columbia University, New York University and the Medical College of Virginia, Richmond, to establish centers for physical medicine and rehabilitation. The three centers, which are being developed over a ten year period, are designed to serve as models for medical schools and hospitals. Research and training projects are also being conducted under committee grants. In addition to financial support for research and training, the Baruch Committee furnishes professional consultation and advice to the universities participating in its program through its Scientific Advisory Committee, consisting of Drs. Frank H. Krusen, Rochester, Minn., chairman; John Stanley Coulter, Chicago; John F. Fulton, New Haven, Conn.; Charles G. Heyd, New York; Andrew C. Ivy, Chicago; William S. Tillet, New York; Frank R. Ober, Boston; Winfred Overholser, Washington, D. C.; Francis O. Schmitt, Ph.D., Cambridge, Mass., and Chauncey D. Leake, Ph.D., Galveston, Texas.

MEXICO

Model Health Center.—The Institute of Inter-American Affairs has signed an agreement with the Ministry of Health in Mexico to construct a model health center in Mexico City, located in one of the poorest and most densely populated parts of the city. The health center will provide services for half of the district's population: clinics for venereal diseases, tuberculosis, acute communicable diseases, maternal and infant hygiene, mental and dental hygiene, a laboratory and facilities for health education, sanitary engineering and inspection, and a milk distribution center. Ample waiting rooms will be provided, and space will be furnished for the library and classrooms for teaching.

LATIN AMERICA

Vaccination Requirements for Persons Leaving Colombia.—All persons departing from Colombia, South America, must possess a medical certificate stating they have no infectious or contagious diseases and have also certificates of vaccination against smallpox and yellow fever. According to a resolution issued May 28, 1948, by the Minister of Health, the latter certificates must be issued by an official entity; this has been interpreted to mean that vaccination certificates are acceptable when issued by the Colombian Ministry of Health or by national public health services of other countries on Pan American Sanitary Bureau forms. Certificates issued by private physicians or clinics in Colombia or elsewhere are not acceptable. Americans traveling to Colombia may avoid revaccination and delay if they secure acceptable vaccination certificates in the United States. Colombia also requires that persons departing from that country bear official certificates of vaccination against typhoid "in the event of typhoid fever and whenever the situation warrants."

FOREIGN

Gift of Electron Microscope to Norway.—The Institute of Bacteriology of the University of Oslo, Norway, has received an RCA electron microscope as a gift from Erling H. Samuelsen, Norwegian shipowner. The instrument is Norway's first electron microscope and will be applied to research in the different virus infections in Norway. The Institute of Bacteriology, a branch of the government-operated University of Oslo, was founded ten years ago with funds provided by Kaptein W. Wilhelmsen, also a shipowner. Its work is directed mainly toward instruction of medical students and research in bacteriology and serology.

CORRECTION

Hospital Research Committee.—In the June 19, 1948 issue of THE JOURNAL, p. 710, Dr. John Homans, Boston, was incorrectly named as a member of the scientific advisory committee of The Massachusetts General Hospital.

Western Electric Hearing Aids.—The report entitled "Western Electric Hearing Aids, Models 65 and 66, Acceptable" appeared in the June 5 issue of THE JOURNAL (137:534). Inadvertently the thickness of Model 66 was recorded as 3.8 cm. (1½ inches), whereas it should have been 2.8 cm. (1¼ inches).

Marriages

JOSEPH GEORGE FUREY III, West Orange, N. J., to Miss Loretta Louise Boyan of Englewood, June 12.

LEE FREDERICK VOSBURGH, Passaic, N. J., to Miss Millicent Louise Gordon of Albany, N. Y., June 5.

DAVID SANDERS HOWELL, Boothbay Harbor, Maine, to Miss Margaret Blue of Miami, Fla., June 5.

THOMAS WOODWARD HUTSON JR., to Miss Patricia Ruth Weiland, both of Miami, Fla., in June.

BERTRAM E. SPROFEN, Paterson, N. J., to Miss Millie Small of Conway Springs, Kan., June 11.

JAMES KNIGHT QUIGLEY to Miss Florence Theresa Pocock, both of Rochester, N. Y., July 7.

LILLIAN IRENE MCCAIN to Mr. Daniel Miles McFarland, both of Southern Pines, N. C., June 9.

WILLIAM CLAYTON ROBERTSON to Miss Gloria Hoover Tyler, both of Richmond, Va., June 12.

CHARLES G. ADSIT JR., New York, to Miss Mary Priscilla Amberson of Riverdale, June 12.

NEIL CALLAHAN, Vicksburg, Miss., to Miss Frances Estelle Wilson of Norfolk, Va., June 5.

JAMES KENT RHODES, Raleigh, N. C., to Miss Helen Sara Havnaer of Hickory, June 12.

ROBERT EDWARD DAVIS, Brooklyn, to Miss Harriette Woronow of New York, July 11.

RICHARD P. GLOVE, Cleveland, to Miss Lois Lucille Yost at Wooster, Ohio, July 10.

RICHARD THOMAS JAMES to Miss Georgia C. Graham, both of Atlanta, June 5.

JAMES ALLEN, Florence, S. C., to Miss L. Johnson of Marion, June 5.

Deaths

Gilbert Christian Anderson, New Orleans; born in Jackson, Tenn., Dec. 11, 1885; Columbia University College of Physicians and Surgeons, New York, 1917; clinical professor of surgery at Louisiana State University School of Medicine; formerly instructor in neurosurgery at Tulane University of Louisiana School of Medicine; co-founder and first president of the New Orleans Society for Neurology and Psychiatry; past president of the Louisiana State Medical Society and the Orleans Parish Medical Society; member of the American Medical Association, Southeastern Surgical Congress, National Gastroenterological Association, Southern Psychiatric Association and the Central Neuropsychiatric Association; member of the founders' group of the American Board of Surgery; specialist certified by the American Board of Neurological Surgery; fellow of the American College of Surgeons; served during World War I; at one time on the staff of the Mayo Clinic, Rochester, Minn.; neurologic surgeon at the Charity Hospital of Louisiana, where he was president of the medical staff, Southern Baptist Hospital, Hôtel Dieu, French Hospital, Eye, Ear, Nose and Throat Hospital, Flint Goodridge Hospital of Dillard University, Touro Infirmary and the U. S. Marine Hospital; consulting neurologic surgeon, Gulf, Mobile and Ohio Railroad; died June 27, aged 63, of cerebral arteriosclerosis.

William Thomas Corlett, Cleveland; born in Orange, Ohio, April 15, 1854; University of Wooster Medical Department, Cleveland, 1877; L.R.C.P., London, 1881; professor emeritus of dermatology at the Western Reserve University School of Medicine; specialist certified by the American Board of Dermatology and Syphilology; a founder and past president of the Cleveland Medical Library Association; in 1937 furnished and endowed a room in the Cleveland Medical Library dedicated to research in dermatology and syphilology; past president of the American Dermatological Association; in 1883 he was elected to the Cleveland Board of Health and was active in the development of health program for public schools in Cleveland; member of the American Medical Association and in 1902 member of its House of Delegates; founder of the department of syphilology and dermatology at Lakeside Hospital; served as consulting dermatologist to the City, St. Alexis and Babies and Childrens hospitals; in 1943 received an honorary doctorate of humanities from Western Reserve University; author of "Medicine-Man of the American Indian and His Cultural Background" and other books; died June 11, aged 94, of cerebral thrombosis.

William Van Pelt Garretson ☉ New York; born in Jersey City, N. J., March 2, 1880; Columbia University College of Physicians and Surgeons, New York, 1903; formerly clinical professor of neurology at the New York Polyclinic Medical School and Hospital; specialist certified by the American Board of Psychiatry and Neurology; a member of the medical board and advisory committee on neurology and psychiatry at Doctors Hospital; served as neuropsychiatrist at Vanderbilt Clinic and consulting neuropsychiatrist at Flower and Fifth Avenue Hospitals and Reconstruction Hospital; consulting neuropsychiatrist at the Bayonne (N. J.) Hospital, Lawrence Hospital in Bronxville, N. Y., New York State Reconstruction Home, West Haverstraw, Manhattan State Hospital and Harlem Hospital; consulting neuropsychiatrist and endocrinologist at St. Clare's Hospital, where he died June 5, aged 68.

James LeRoy Campbell ☉ Atlanta, Ga.; born in Hopewell, Ga., July 15, 1870; Atlanta Medical College, 1893; emeritus professor of clinical surgery at the Emory University School of Medicine; past president of the Fulton County Medical Society; member of the founders' group of the American Board of Surgery; fellow of the American College of Surgeons; served on the staffs of the Emory University and Grady Memorial hospitals; director of the Sheffield Cancer Clinic, Georgia Baptist Hospital; in 1937 his name was inscribed on the L. G. Hardman Loving Cup, awarded annually to the physician considered to have rendered the most distinguished medical service during the previous year; for many years chairman of the Georgia executive committee of the Georgia division of the Field Army of the American Cancer Society; from 1939 to 1946 member of the board of directors of the American Cancer Society; died June 11, aged 77, of coronary thrombosis.

James Stewart ☉ Jefferson City, Mo.; born in Glasgow, Scotland, Sept. 22, 1874; Barnes Medical College, St. Louis, 1895; at one time practiced in Holstein, Mo., where he served as coroner of Warren County and as local surgeon for the Missouri, Kansas and Texas Railroad; formerly associated with the U. S. Public Health Service; serving as secretary of the

state board of health and as state health commissioner; in 1929 established what is now the bureau of vital statistics of Missouri; formerly director of the hygiene division of the public school system in St. Louis; formerly member of the state legislature; an Affiliate Fellow of the American Medical Association; member of the American Public Health Association, Missouri Crippled Children's Society and the Missouri State Tuberculosis Association, of which he had been president; served as a member of the city chamber of commerce; on the staff of St. Mary's Hospital, where he died May 18, aged 73, of cerebral hemorrhage.

Frank Vero ☉ New York; born in Czechoslovakia in 1897; Univerzita Komenského Fakulta Lekarská, Bratislava, Czechoslovakia, 1922; professor of dermatology and syphilology at the New York Polyclinic Medical School and Hospital; instructor in dermatology at the Columbia University College of Physicians and Surgeons; member of the American Academy of Dermatology and Syphilology; specialist certified by the American Board of Dermatology and Syphilology; formerly secretary of section on dermatology and syphilology of the New York Academy of Medicine; assistant visiting dermatologist at the Lincoln Hospital; attending dermatologist and syphilologist to the New York Polyclinic Medical School and Hospital, Presbyterian Hospital and Vanderbilt Clinic; died May 18, aged 50.

William Melville Smith ☉ Olean, N. Y.; born in Olean, N. Y., Dec. 20, 1900; University of Buffalo School of Medicine, 1924; fellow of the American Public Health Association; for many years coroner of Cattaraugus County; from 1937 to 1942 assistant district state health officer in New York state; major in the medical corps, Army of the United States, serving in England during World War II; formerly director of preventable diseases, North Dakota State Department of Health in Bismarck, and acting state health officer; served on the faculty of St. Bonaventure (N. Y.) College and as consultant on the staff of the Edward J. Meyer Memorial Hospital in Buffalo; died May 29, aged 47, of coronary thrombosis.

Charles Henry Young, La Porte, Texas; born in Everett, Mass., March 22, 1876; Tufts College Medical School, Boston, 1905; chief of hospitalization for the U. S. Army in England during World War I; formerly superintendent of the Presbyterian Hospital in New York, Hospital of the Good Shepherd in Syracuse, N. Y., Maine General Hospital, Portland, Mountinside Hospital, Montclair, and Stamford Hospital in Stamford, Conn.; at one time temporary superintendent of the Jefferson Hospital in Birmingham, Ala., and associate professor of hospital administration at the Syracuse (N. Y.) University College of Medicine; died in the U. S. Naval Hospital, Houston, Texas, May 22, aged 72.

Louis Albert Thomas, Red Oak, Iowa; born in 1862 (licensed in Iowa in 1893); member of the American Medical Association; formerly secretary of the state board of health, secretary of the state board of medical examiners and state registrar of vital statistics; for many years health officer and medical inspector of schools for the city of Red Oak; charter member of the board of directors of the Montgomery County Chapter of the American Red Cross, serving as executive secretary for many years; affiliated with the Murphy Memorial Hospital, where he died May 26, aged 86, of carcinoma of the colon.

John George Abbott, West Hollywood, Calif.; Jefferson Medical College of Philadelphia, 1905; died May 22, aged 69, of bronchopneumonia.

Elmer E. Allenbaugh, Dale, Ind.; Cincinnati College of Medicine and Surgery, 1888; died June 6, aged 87, of myocarditis.

Gabriele Ariola, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1915; died in Hollywood, Fla., June 7, aged 71, of pneumonia.

Alonzo Eugene Austin, New York; New York Homeopathic Medical College and Hospital, New York, 1897; formerly on the faculty of his alma mater; died in the Flower and Fifth Avenue Hospitals, June 20, aged 79, of cerebral arteriosclerosis.

William Emerson Barnes, Evansville, Ind.; Indiana University School of Medicine, Indianapolis, 1916; served during World War I; for many years connected with the county board of health; past president of the staff of Deaconess Hospital; died in McFarland Hospital, Lebanon, Tenn., May 23, aged 56, of cerebral hemorrhage.

Ernest Edward Bishop ☉ Cincinnati; University of Cincinnati College of Medicine, 1919; tuberculosis coordinator of Hamilton County since 1941; member of the American Trudeau Society; instructor in medicine at his alma mater; formerly superintendent of the Hamilton County Tuberculosis Sanatorium; on the staff of the Cincinnati General Hospital; died June 13, aged 53, of coronary occlusion.

Joseph Bixby * Geneva, Neb.; University Medical College of Kansas City, Mo., 1900; past president of the Nebraska State Medical Association; mayor of Geneva from 1932 to 1946; during World Wars I and II served on the advisory and examining boards of Fillmore County; affiliated with Geneva General Hospital; died in Chicago June 25, aged 72, of heart disease.

Stonewall Jackson Blackmon * Kershaw, S. C.; Jefferson Medical College of Philadelphia, 1918; died June 15, aged 55, of coronary occlusion.

Andrew Blair * Charlotte, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1924; served during World War I; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; past president of the Mecklenburg County Medical Society; on the staff of Presbyterian Hospital, where he died June 3, aged 52, of coronary occlusion.

James Michael Borgia, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1918; on the staff of the Adelphi Hospital; died June 9, aged 57, of cirrhosis of the liver.

Walter William Boyne, East St. Louis, Ill.; St. Louis University School of Medicine, 1913; formerly county coroner; served during World War I; died June 23, aged 58, of streptococcal endocarditis.

James Richard Brandon, Canton, Ohio; Ohio State University College of Medicine, Columbus, 1925; specialist certified by the American Board of Otolaryngology; on the staff of the Aultman Hospital; member of the American Medical Association; died May 29, aged 51, of carcinoma of the right kidney.

William Ausborn Brewer * Cowan, Tenn.; Memphis Hospital Medical College, 1911; served overseas during World War I; died May 24, aged 65, of myelogenous leukemia and diabetes mellitus.

Elizabeth Stow Brown, New York; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1885; secretary of the Montclair (N. J.) Chapter of the American Red Cross during World War I and decorated by the French government for her services to the American Hospital in Paris; died in the New York Infirmary April 9, aged 87, of arteriosclerotic heart disease with decompensation and mesenteric thrombosis.

William R. Brumfield, Gloster, Miss.; Louisville (Ky.) Medical College, 1891; member of the American Medical Association; past president of the Amite County Medical Society; formerly member of the state legislature, board of aldermen and school board; died June 7, aged 80, of lobar pneumonia.

Harry Ralph Carroll, Cincinnati; University of Cincinnati College of Medicine, 1912; member of the American Medical Association; died at St. Mary's Hospital May 10, aged 58, of congestive heart failure and hypertension.

Roy Lewis Carter, Louisville, Ky.; Hospital College of Medicine, Louisville, 1898; county coroner; affiliated with the Kentucky Baptist and St. Anthony's hospitals; died May 10, aged 74, of coronary occlusion.

David Troy Cheairs, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1914; member of the American Medical Association; medical examiner for the Workmen's Compensation Commission; on the staffs of St. Vincent's and Baptist State hospitals; died May 28, aged 62, of coronary heart disease.

Martin Francis Crotty * Cambridge, Mass.; Boston University School of Medicine, 1924; member of the New England Obstetrical and Gynecological Society; served during World War I; affiliated with the Chester Hospital; died June 5, aged 54, of cerebral hemorrhage.

Albert Johnston Gardner, Norborne, Mo.; Washington University School of Medicine, St. Louis, 1901; city health officer; died in St. Joseph, May 4, aged 74, of cerebral hemorrhage.

Joseph Savan Gatlin * Laurel, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1912; served overseas during World War I; died June 14, aged 61, of coronary thrombosis.

Frederick William Gessner * Dysart, Iowa; Northwestern University Medical School, Chicago, 1910; past president of the Tama County Medical Society; for many years served on the board of education and as health officer; died June 7, aged 68, of coronary occlusion.

James Garfield Janney * Dodge City, Kan.; Ensworth Medical College, St. Joseph, Mo., 1910; formerly associated

with the Indian Service; served during World War I; died in De Paul Hospital, St. Louis, May 26, aged 64, of dislocation of the cervical spine with paraplegia received in an automobile accident.

George Klumpner, Ottawa, Ill.; Loyola University School of Medicine, Chicago, 1921; member of the American Medical Association; past president of the La Salle County Medical Society; served during World War I and during World War II; psychiatrist for the La Salle County draft medical advisory board; affiliated with the Ryburn-King Hospital, where he died June 1, aged 55, of coronary occlusion.

Minerva Blair Pontius * Ann Arbor, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; died May 1, aged 77, of chronic myocarditis.

Elias Pratt, Essex, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1887; member of the American Medical Association; past president of the Connecticut State Medical Society, Connecticut Public Health Association and the Litchfield County Medical Society; for many years practiced in Torrington, where he was on the staff of the Charlotte Hungerford Hospital, city health officer and school and city physician; died May 28, aged 88, of coronary occlusion.

Alfred Skippen, Portland, Ore.; Victoria University Medical Department, Coburg, Ontario, Canada, 1892; died May 8, aged 88, of senility.

Harry Wilbur Smiley, Indio, Calif.; University of Arkansas School of Medicine, Little Rock, 1918; member of the American Medical Association; formerly associated with the Indian Service; died in the Scripps Memorial Hospital, La Jolla, April 26, aged 63, of bronchogenic carcinoma of the right lung.

James Herbert Sowerby, Bedford, Va.; Northwestern University Medical School, Chicago, 1907; died in the John Russell Hospital May 23, aged 65, of coronary occlusion.

Charles William Spragg, Waynesburg, Pa.; Jefferson Medical College of Philadelphia, 1897; member of the American Medical Association; on the staff of the Greene County Memorial Hospital; died in the Western Pennsylvania Hospital, Pittsburgh, May 4, aged 75, following a prostatectomy.

Robert Armstrong Stewart, Independence, Iowa; Jefferson Medical College of Philadelphia, 1903; member of the American Psychiatric Association and the American Medical Association; superintendent of the Independence State Hospital, where he died May 24, aged 69, of coronary thrombosis.

Samuel Stewart * Syracuse, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1906; formerly school commissioner; served overseas during World War I; on the staff of the Crouse Irving Hospital; died May 15, aged 68, of chronic nephritis and hypertension.

Troy Warren Swallum, Spencer, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1919; member of the American Medical Association; served as county coroner; died in Mercy Hospital, Iowa City, May 5, aged 57, of coronary thrombosis.

Bartholomew Phillip Sweeney * Leominster, Mass.; Baltimore Medical College, 1911; member of the American Urological Association; for many years member of the city health department; on the staff of the Leominster Hospital; died May 20, aged 61, of heart failure.

Lester James Talbot * New York; University of Pennsylvania School of Medicine, Philadelphia, 1936; assistant professor of obstetrics and gynecology at the New York University College of Medicine; served as a fellow in medicine of the National Research Council; on the staff of the Bellevue Hospital; died in the Mount Sinai Hospital June 4, aged 37, of acute staphylococcal endocarditis.

Edith Subers Thompson * Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1903; died April 15, aged 67, of hypertension and arteriosclerosis.

Frank Van Doren, Portland, Ore.; University of Pittsburgh School of Medicine, 1911; served during the Spanish-American War and World War I; died May 23, aged 68, of congestive heart failure.

Harry D. Vincent, Schenectady, N. Y.; Baltimore Medical College, 1893; died in the Glenridge Sanatorium May 7, aged 84, of tuberculosis of the lungs.

William Zimmer * Hillside, N. J.; Columbia University College of Physicians and Surgeons, New York, 1931; served during World War II; on the dispensary staff of the Elizabeth General Hospital and on the staffs of the Community Hospital, Presbyterian Hospital and the Beth Israel Hospital in Newark, where he died June 9, aged 40, of coronary disease.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 31, 1948.

The Inauguration of National Health Service

The British Medical Association has examined the question of "improper practices" alleged in Parliament by a socialist member, because some doctors refused to take certain patients on their lists for the National Health Service. The association finds that the service has started smoothly in most districts. Nevertheless, difficulties are being met with, as is inevitable with such a vast piece of social legislation. These should be neither exaggerated nor glossed over. It would be unfair to put blame on doctors for misunderstandings which are not of their making, and still more unfair to charge the entire medical profession with incorrect behavior which involves only a small minority. The British Medical Association has laid down the following points:

1. The basis of family medical practice is free choice, which works both ways. No doctor should be forced to take any particular patient, just as no person should be forced to have any particular doctor. Neither of them need give any reason for refusal.
2. The service is open to all irrespective of income. The association is confident that the profession in general would strongly deprecate the refusal of any doctor to accept a person as a National Health Service patient on financial grounds. The decision whether to be a public or private patient must be a matter for the individual.
3. Every doctor has a right to set a limit to the number of patients he is prepared to accept on his list. Within the service all receive equal treatment according to their medical needs. It is impossible for the doctor—or indeed for the government or the administration—to give any public patient advantages or privileges not enjoyed by others. It must never be overlooked that there is a grave shortage of doctors and facilities.
4. The association is confident that the profession will feel strongly that, although a doctor is fully entitled to decline work for which he has no special aptitude, it would be entirely wrong for him to discriminate against particular classes; e. g., to refuse to accept as patients children or old persons on the ground that they involve too much work. This is regarded as contrary to the standards of medical practice. It might have been added that some of the dissatisfaction expressed at the inauguration of the service is due to the exaggeration of its advantages and the ignoring of its drawbacks by the socialists, in the usual manner of politicians.

Jonathan Hutchinson as an Educationist

The recent book, "A Country Museum. The Rise and Progress of Sir Jonathan Hutchinson's Educational Museum at Haslemere," portrays this great clinician as versatile in fields outside of medicine. Hutchinson believed that museums should be teaching institutions for both natural science and human history. That exhibits should illustrate definite points, be informatively labeled and supplemented with drawings, photographs or anything else appropriate. "A museum should become a richly illustrated book. It should be a place to which teachers would take their pupils, not once a year as a holiday, but frequently, as the best method of serious study." His enthusiasm he also expressed in this outburst: "Who knows not the delights of a museum after the fatigue and disappointment of books!"

For the teaching of human history and geology he adopted what he called "a space for time method." For each subject a wall of long gallery was ruled into equal divisions, each representing a certain period, which for human history was a century; for geology so many million years. At Haslemere, his country residence near London, at his week end intervals

from professional work, he gave much time to the instruction of children and adults. He lectured on such diverse subjects as "the age of the earth," "fruits and seeds," "chalk," "Hebrew history and Fénelon." Often he would preface his lecture by remarks on objects that he had picked up on his way to the museum such as a flower or a piece of flint. Hutchinson died in 1913, and in 1926 the museum was handed over to trustees by his family.

The Haslemere Education Museum has long been a model of what the museum of a small town should be and has exerted a wide influence on other museums. It has won a unique position by a valuable system of regular lectures to organized parties of school children, of whom nearly 1,000 came in 1946. Hutchinson had no time for what the ordinary man calls amusement, but all his work, whether investigation or teaching, was for him amusement.

PARIS

(From Our Regular Correspondent)

July 15, 1948.

Penicillin and Tuberculosis

Penicillin has been considered as having no effect on the tubercle bacillus. However, P. Courmont and H. Cardere have just reported to the Society of Biology and to the Society of the Lyons Hospitals their research which proves the bacteriostatic and bactericidal (above certain doses) action in vitro of penicillin on *Mycobacterium tuberculosis*. The authors (S. Arloing and P. Courmont) used a homogenous culture of *M. tuberculosis* in a liquid medium, where they develop in three days only; the bacilli are separated one from another in this medium and in this way are better exposed to the action of the antibiotic. A series of tubes containing, with the culture bouillon, penicillin in quantities decreasing from 5,000 units to 10 units per cubic centimeter is inseminated with 40,000,000 tuberculosis bacilli and put into an incubator, together with test tubes containing no penicillin. After three days, the bacillus grows in the latter, but after six days there is no growth in the former. Cultures develop only from the seventh to the twentieth day, in inverse ratio to the quantity of penicillin added. There is no culture in the tubes containing 5,000 and 2,500 units. The antibiotic effect is much more noticeable if the quantities of penicillin destroyed at 37 C. in the tubes are replaced regularly day by day. The test tubes containing no penicillin have always given culture in three days. Acting on those researches, the authors intend using penicillin in the treatment of certain cases. The authors are also considering the use of penicillin therapy, at high doses by subcutaneous and intrarachidial route, in tuberculous meningitis, in the place of the toxic streptomycin.

New Treatment of Amebic Dysentery

Recently Lepesme reported in the *Revue de Botanique Appliquée* that *Holarrhena floribunda* (a shrub of the apocynaceous family) contains alkaloids specifically effective on dysenteric amebae and cysts. At a recent meeting of the National Academy of Medicine, Crosnier, Merle and co-workers set forth their first therapeutic results.

1. With total extract of this plant, they obtained disappearance of amebae in 9 of 13 cases of acute dysentery and failed in 4; treatment was successful in all of 6 cases of colitis with the cysts present. Those results are the more interesting because the patients had previously been treated without success with emetin.

2. The use of conessine hydrochlorate in 13 cases of acute dysentery (*Endamoeba histolytica*) was successful in 12 cases. Dosage varies according to the degree of intolerance of the subject: as a rule, 0.50 Gm. per day (0.10 Gm. tablets) is given for four to five days, and then the dose is decreased to 0.40 Gm.,

0.30 Gm., 0.20 Gm.; average total dose: 5 Gm. If there is intolerance above 0.30 Gm. per day, treatments are to be spread out over fifteen to twenty days.

The authors are of the opinion that total extracts of *Holarrhena floribunda* are as effective as acetarsone; perhaps future experience will permit one to consider it as superior to emetine.

Death of Professor Alexandre Couvelaire

A well known obstetrician, a member of the National Academy of Medicine, has died at the age of 75. He was a disciple of Adolphe Pinard, whom he succeeded. The most important among his numerous works are an anatomico-pathologic study of ectopic pregnancies and a study of uteroplacental apoplexy, which is so complete that this disease will henceforth bear his name. His "Introduction to the Study of Obstetrical Surgery" is one of the best medical books. He inaugurated at the Clinique Baudelocque the dispensary for hereditary diseases, an institution with which all maternity hospitals in France have been provided. One of his numerous disciples, Professor Levy-Solal, succeeds him at the Clinique Baudelocque.

Personals

Dr. G. Baehr, chief of the medical department at the Mount Sinai Hospital, president of the New York Academy of Medicine, was received at one of the recent meetings of the Paris National Academy of Medicine.

Dr. A. M. Pappenheimer of New York University has just delivered a lecture at the Pasteur Institute on the diphtheric toxin considered in its relations with the respiratory system.

ITALY

(From Our Regular Correspondent)

July 9, 1948.

Stenosis of the Esophagus

Reports were presented during the recent National Congress of Surgery on stenosis of the esophagus. Professor Redi reported on cicatricial stenosis and Professor Ferreri and Dr. Coppo on the diagnosis of stenosis of the esophagus by means of esophagoscopy.

Professor Redi discussed stenosis resulting from the ingestion of caustic solutions. Children have paid the largest tribute to these grave incidents. Rapid improvement after the acute incident leads the family of the victim and sometimes the physician to a fallacious optimism and to the omission of adequate prophylaxis of the future stenosis. Young persons may be saved instead of becoming unfortunate carriers of a gastric fistula, condemned to a short and unhappy existence.

With regard to therapy, the speaker distinguishes two groups of stenosis: those which may be benefited by conservative treatment based only on subsidiary surgical measures such as peroral dilation and the graver cases in which extensive surgical treatment is required to create a new way of communication between the part of the esophagus above the stricture and the stomach. The speaker discussed the complex surgical procedures which have been employed in prethoracic esophagoplasty. The results, sometimes brilliant but uncertain, have induced surgeons to study methods of improving the esophagoplasty.

Great interest was shown in the results of the Anglo-American surgeons whose methods are based on using the stomach, which is drawn into the thorax through a diaphragmatic breach until anastomosis of the fundus with a portion of the esophagus above the stenosal lesion may be accomplished. With ingenuity those anastomoses, which can be combined with resection of the diseased esophagus, may be practiced also above the arch of the aorta, thus carrying the stomach almost to the superior orifice of the thorax. The results were entirely satisfactory. Professor Redi predicted

the use by Italian surgeons of these definitely promising procedures.

In the second part of the report Professor Ferreri and Dr. Coppo furnished evidence of the importance of endoscopy in diagnosis. Esophagoscopy deserves to become the common procedure in all patients who have disturbances of the esophagus. Dysphagia and hematemesis are the main symptoms which require esophagoscopy. Aneurysm, advanced cachexia, severe diabetes and hyperazotemia are to be considered as contraindications to endoscopic examination.

With regard to anesthesia the speakers recommended limiting general anesthesia to the cases of intractable children or cases in which it may be a means of relieving a spastic condition of the esophagus. In other cases local anesthesia, as a rule, is recommended and it may be preceded by basal anesthesia. In young infants and in old persons one may use either one of the types of anesthesia.

Among the contributions presented on this subject, Professor Broglio of Belluno discussed two methods of esophagoplasty most frequently employed, that of Lexer (jejunodermoesophagostomy) and that of Wullstein (colonodermoesophagostomy). He reported 3 patients with insurmountable stenosis of the esophagus after the ingestion of caustics, operated on with favorable results. One of them submitted to twenty-four interventions before he recovered. The speaker also discussed the modifications of the technic which he had applied to the original surgical methods.

In the discussion Professor Dogliotti, of the University of Turin, emphasized the excellent results obtained by Broglio, but pointed out the difficulties in doing prethoracic plastic operations; he insisted that one should practice dilation as soon as possible.

At the end of the discussion Professor Redi emphasized that concerning the lower third of the esophagus many surgeons agree to institute the new intrathoracic surgery, while concerning the median and upper thirds many authors have a reserved attitude. It is important to note that this surgery requires a complete and suitable instrumentation.

Meeting of Dr. Pappenheimer (New York) and Dr. Holt (London) in Naples

An interesting scientific meeting took place between Dr. A. M. Pappenheimer from the University College in New York and Dr. L. B. Holt, director, Department for Toxins and Antitoxins, Wright Institute, London, at the Italian Scientific Institute and in the presence of many authorities of various universities. Present were many Italian scientists and many from abroad. Dr. Pappenheimer discussed his research on the allergic reactions to diphtheric antigens which are an obstacle to the extensive vaccination of adults. The importance of the problem has grown with the increased incidence of diphtheria in many countries. Dr. Pappenheimer demonstrated that the allergic reactivity is the highest in Schick-negative persons. Based on these results experiments of vaccination were initiated in adults in New York. Dr. Holt, Professor Carlinfanti and Professor Zironi participated in the discussion.

Conferences Held by Drs. Kessler and Weintrob

Contemporaneously there have been held two important conferences by Drs. Kessler and Weintrob in the rooms of the United States Information Service. The conference of Dr. Kessler dealt with the rehabilitation of amputees. An interesting motion picture in colors was shown on the same subject. In addition to its technical value, this conference brought forth statements of sociophilosophic character of great importance. Dr. Kessler is going to Greece for additional conferences, having been invited by the Greek Government. Dr. Weintrob also was successful with his subject, Surgical Lessons of World War II.

Correspondence

RADON TREATMENT OF CANCER OF THE BLADDER

To the Editor:—Dr. Benjamin S. Barringer in the discussion of his paper, "Twenty-Five Years of Radon Treatment of Cancer of the Bladder" in *THE JOURNAL* (135:616-618 [Nov. 8] 1947), questioned many features of an article of mine, "A Comparison of Radiation and Surgery for Cancer of the Bladder," (*J. A. M. A.* 134:501-507 [June 7] 1947). He concluded, "I doubt the accuracy of his published results."

Dr. Barringer may interpret the figures as he sees fit, but the accuracy of them has been substantiated by an independent observer. This substantiating study has been recently published as a part of an editorial comment in the abstract section of the new journal *Cancer*.

Radiation of vesical cancer is a widely accepted method of therapy, so that the accuracy of published results obtained in 300 consecutive cases which were treated during a time of great enthusiasm should be important to all those dealing with this disease. Dr. Barringer's remarks had increased the therapeutic confusion particularly by doubting the principal basis of my article, the statistics.

VICTOR F. MARSHALL, M.D., New York.

TREATMENT OF MENINGITIS

To the Editor:—I have read with interest the letter from Dr. David Lehr which appeared in *THE JOURNAL* July 24, page 1150.

Most of the apparent differences between Dr. Lehr's results and ours are due to different objectives and a difference in the methods used. We were attempting to determine whether a larger dose of sulfonamide compounds than is customarily used would lower the fatality rate in meningitis, and we employed the sulfadiazine-sulfamerazine combination in the hope that it would prevent the increase in renal calculi which might otherwise result from the increased dose, or better still, might lower the incidence of renal calculi in spite of the increased dose. Our paper reported the results obtained with this higher dose.

We agree that it would be unfortunate if anyone should misconstrue our report to mean that, if similar doses of sulfonamide compounds were employed, the incidence of calculi would not be less in the patients receiving the sulfonamide compounds than in those receiving a single sulfonamide compound.

The proportion of patients who received sulfonamide drug intravenously was no different in our two series. The same clinicians were responsible for the treatment in both instances and the same criteria were employed to select those patients who were to receive the sulfonamide compounds by the intravenous route. There were no instances in either series in which conjunctivitis occurred alone. Whenever conjunctivitis was attributed to hypersensitivity to sulfonamide drug, it occurred along with a sulfonamide rash.

The one real difference in our findings is the increased incidence of sensitization when two drugs are used compared to one drug alone. This may have been due to the differences in total dosage employed in our two series, but the evidence (cited in our discussion) which we had previously obtained when we used sulfadiazine-sulfathiazole mixtures in pneumonia is against this conclusion. Theoretic reasons might be advanced in favor of either possibility; that is, either an increase or a decrease in the incidence of sensitization when a combination of drugs is used. Accordingly, the only way to deter-

mine which point of view is correct is to carry out controlled studies in several centers in which such a comparison is made, using the identical total dosage in each instance. We hope that such studies will be undertaken. Regardless of the results of these studies, however, we feel that the conclusion in our original article is still valid; namely, "that in the doses employed for the treatment of meningococcic meningitis the disadvantages of using a mixture of sulfadiazine and sulfamerazine outweigh the advantages."

HARRY F. DOWLING, M.D., Washington, D. C.

Medical Motion Pictures

FILM REVIEWS

Some Aspects of Clinical Endocrinology. 16 mm., black and white, silent, 1,175 feet (4 reels), showing time forty-nine minutes (sound speed). Prepared in 1936 by Lewis M. Hurxthal, M.D., Medical, Surgical and Neurosurgical Departments of Lahey Clinic, Boston, Mass. Produced by and procurable on loan from: Worcester Film Corporation, 131 Central Street, Worcester, Mass.

This film is a review of each gland of internal secretion with a fairly successful attempt to show a patient with the diseases due to overactivity or underactivity of each gland. It contains an excellent collection of cases and, since the appearance of the patients with these diseases does not alter through the passage of the years and since the authors confined themselves to basic facts which also have not changed, the film is just as accurate now as when printed. The "split frame" technic of showing patients "before and after" is well done.

If the film were in color and the photography of more recent perfection, it would still probably be the best in its field. As it is, the lack of color and the "flicker" would almost immediately impress an audience with its antiquity, and the audience would lose interest in what was being presented regardless of its perennial soundness. This production is suitable for showing to practicing physicians, medical students and nurses.

The School That Learned to Eat. 16 mm., color, sound, 800 feet (1 reel), showing time twenty-five minutes. Prepared in 1948 by the University of Georgia, School of Education, Athens, and sponsored by General Mills, Inc., Minneapolis. Produced by Southern Educational Film Production Service. Procurable on loan from: General Mills, Inc., 400 Second Avenue, South, Minneapolis 1.

The film tells the story of how a small village in Georgia improved the health of its children and a whole community. The health situation in their village was studied. One of the important factors found which contributed to poor health related to poor eating habits, and the film shows how the community improved its health by improving its eating practices. The solution was worked out by using old as well as new and ingenious devices. It is an interesting story for adults and teachers and could be understood and enjoyed by children. The color photography is excellent.

Coarctation of the Aorta. 16 mm., color, sound, 900 feet (1 reel), showing time twenty-seven minutes. Prepared in 1948 by John C. Jones, M.D., Thoracic Surgery Department, Children's Hospital, Los Angeles, Calif. Produced by Billy Burke, Hollywood, Calif. Procurable on loan from the author, 1136 West Sixth Street, Los Angeles 14.

This film briefly reviews the embryology, anatomy and physiology of coarctation of the aorta, outlines the clinical features and roentgen findings, then explains the surgical treatment. Resection of a coarctation with end to end anastomosis is illustrated, then followed by roentgenograms and the presentation of the patient three months postoperatively. The anatomy and physiology and the operation are clearly shown. This production shows evidence of advance planning. It is well organized, the color photography is excellent, and it is recommended as a teaching film for medical students; also for surgeons who wish to review the surgery of coarctation of the aorta.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various Centers, Feb., June, and Sept., 1949. *Part II.* April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa. *Part III.* Boston and New York, Autumn. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral.* Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 18. *Oral.* Chicago, Oct. 13-15; Philadelphia, Nov. 3-5; San Francisco, date not set. Candidates not taking these special oral examinations will have no opportunity for admission next year. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Chicago, Oct. 6. *Written.* Various Centers, January 1949. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I.* Various Centers, April & May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Seattle, Sept. 10-12. Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: New York City, Dec. 13-15. Final date for filing application is Sept. 15. Sec., Dr. F. J. Braceland, 102-110 2nd Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Little Rock*, Nov. 4-5. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St. Little Rock.

CALIFORNIA: *Oral.* Los Angeles, Nov. 20-21. *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * *Endorsement.* Denver, Oct. 5. Final date for filing application is Sept. 18. Sec.-Treas., Dr. Walter W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * *Examination.* Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination.* Derby, Nov. 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity.* Washington, Sept. 13. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

GEORGIA: *Examination.* Atlanta, Oct. 12-13. *Endorsement.* Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: *Endorsement.* Agaña, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

ILLINOIS: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Des Moines, Dec. 6-8. *Endorsement.* Des Moines, Oct. 4. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination.* Louisville, Dec. 13-15. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

LOUISIANA: *Examination.* New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Hilernia Bank Bldg., New Orleans 12. *Homeopathic Examination.* Baton Rouge, subject to call. Sec., Dr. F. H. Hardenstein, 715 Peré Marquette Bldg., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination.* Baltimore, Dec. 7-8. Sec., A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. G. L. Schadt, 413 E. State House, Boston.

MICHIGAN: * *Examination.* Lansing, Oct. 13-15. *Endorsement.* Oct. 12. Sec., Dr. J. E. McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSOURI: St. Louis, Oct. 25-27. Exec. Sec., Mr. John A. Hailey, P.O. Box 4, Jefferson City, Mo.

MONTANA: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW JERSEY: *Examination.* Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchold, 141 Palace Ave., Santa Fe.

NEW YORK: *Examination.* Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 23 South Pearl St., Albany 7.

OHIO: *Examination.* Columbus, Dec. *Endorsement.* Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Oct. 24-25. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: * *Examination.* Portland, Jan. 1949. *Endorsement.* Oct. 15-16. Final date for filing application is Oct. 1. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: *Examination.* Santurce, Sept. 7-11. Sec., Mr. Luis Cueto Coll, 22 Purada, Box 3717, Santurce.

RHODE ISLAND: * *Examination.* Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Endorsement.* Oct. 4. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TENNESSEE: * Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, 1305 Amicable Bldg., Waco.

UTAH: *Examination.* Salt Lake City, July. *Endorsement.* Oct. 4. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination.* Burlington, Feb. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Examination.* Richmond, Dec. 3-4. *Endorsement.* Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WEST VIRGINIA: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

WYOMING: *Examination.* Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, Sept. 21. Sec., Mr. Francis A. Roy, Univ. of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 5. Sec., Mr. L. E. Gelauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, Sept. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

CONNECTICUT: *Examination.* Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

FLORIDA: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

MINNESOTA: *Examination.* Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar P. Humble, Room 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: *Examination.* Santa Fe, Sept. 19. Sec., Miss Marguerite Kilkenny, 110 W. Houghton St., Santa Fe.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Dec. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: *Examination.* Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WASHINGTON: Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: *Examination.* Madison, Sept. 25. Final date for filing application is Sept. 18. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Medical Economics

GERMAN EXPERIENCE WITH SOCIAL INSURANCE

F. G. Dickinson, Ph.D., Director, Bureau of Medical Economic Research

NOTE: This summary of an important study of interest to physicians has been prepared without critical comment on the author's materials, data and interpretations; it is merely a summary.—ED.

Social Security measures in the United States have not yet been tested under adverse economic conditions; Germany has operated state-sponsored welfare programs for over half a century. Dr. Sulzbach¹ reviews the history of German social insurance in order that America may foresee the economic and psychologic problems which she will face in the future.

The concept of compulsory social insurance was introduced in Germany by Chancellor Bismarck in 1881, in order to win over the laboring class by offering a form of government assistance more dignified than relief. Because employers were required to pay a part of the premiums, the programs were enthusiastically received by the workers and grew until the 1932 depression revealed their basic flaws. The several schemes were never integrated into an over-all system; each operated under a different plan and a separate administration. Each, with the exception of unemployment insurance, started from a small beginning and expanded to include additional benefits and wider occupational and income groups.

GERMAN HEALTH INSURANCE

The sickness insurance act, introduced in 1883, was the first of the German compulsory social insurance programs. Autonomous local funds, organized along occupational lines, collected premiums and distributed benefits. Rates were set at 1½ per cent of wages, two thirds to be paid by the insured and one third by the employer. Statutory benefits consisted of free medical care for thirteen weeks and a cash benefit amounting to 50 per cent of the local wage rate paid from the fourth day of illness. Inclusion of additional benefits and rapid expansion of coverage led to the breakdown of the system in the depression. It was not until Hitler came to power that artificial stimulation of the German economy put the program on its feet again.

Cost of Administration.—Cost of administering the German health insurance program is estimated at 9.6 per cent of total expenditure in 1914, and 6.8 per cent in 1925. These figures do not include bookkeeping costs of employers and legal and postal services performed free of charge by the government. Perhaps a more accurate picture is given by the fact that four fund workers were employed for every three insurance doctors.

The Problem of Malingering.—Under German health insurance, the duration of illness increased progressively from 14.1 days per illness in 1885 to 29.3 days per illness in 1932. The latter figure is 70 per cent higher than in the United States. Supervising physicians, appointed to curb abuses, found up to 50 per cent of the persons on sick lists able to work. During the depression, an emergency measure required the payment of a small fee for medical services and prescriptions; insurance claims promptly dropped more than 50 per cent in many companies. The principle of risk sharing, recognized by other health insurance countries, seems to be the only effective way to check malingering.

The Medical Profession Under Health Insurance.—At its outset in Germany, health insurance was not socialized medicine and was not opposed by the medical profession. Prior to 1913, the funds hired a limited number of physicians and the insured had no choice of doctors. Protests by the members of the profession led to an agreement in 1913 providing for contract committees representing physicians and the funds and for free

choice of physicians on the fund roster. Payment was on a capitation basis. By 1928, 80 per cent of German doctors were participating in the system and their pay, averaging \$2,620 annually, constituted 60 per cent of all medical earnings. The ratio of physicians to insured persons was 1 to 1,350.

The achievements of the German health insurance program are difficult to estimate. Infant mortality and death rates declined no faster in health insurance countries than in countries without such programs. The deficiencies of the system are far more apparent, and are instructive to American social planners. Supervising physicians had to be withdrawn from practice in order to prevent abuses. Malingering made premiums excessively high and reduced production by increasing unnecessary absenteeism. Risk sharing was necessary, but extremely unpopular. The incidence of the premium paid by the employer fell on the worker in the form of lower wages or decreased employment; thus the entire cost of the program was actually borne by the insured.

ACCIDENT INSURANCE

Accident insurance is more widespread than any other form of social insurance. Germany set the pace in 1884, with a system in which occupational associations paid the entire contribution for manual laborers in their fields. Premiums were determined by the size of payrolls and the risks involved in each occupation. Benefits included medical treatment, funeral benefits and survivors' pensions, and pensions for total or partial incapacity. By 1928, sixty-six occupational groups were covered. Expansion of benefits and coverage continued until the depression forced a reduction in employers' contributions. The accident insurance program was continued and strengthened under Hitler, who found, as had Bismarck half a century before, that the German people would willingly exchange their liberty for apparent security.

INVALIDITY AND OLD AGE INSURANCE

The first invalidity and old age insurance measures were passed in Germany in 1889; by 1916, all occupational categories included under the health insurance program were covered. Employer and employee contributed equal sums, with the government adding an amount equal to approximately one half of the cost of benefits. The scheme was administered by the government with no participation by the insured. When the inflation following the first world war wiped out its reserves, the financial basis of the system collapsed and made necessary an emergency reduction of pensions. Since that time, the increasing age of the population has prevented the accumulation of new reserves out of premiums, and the system has been maintained largely by government subsidy.

Germany's old age pensions were too small to support beneficiaries without supplementary sources of income; the same is true of American pensions, although they are somewhat higher. This fact makes it necessary for the majority of pensioners to apply for relief and defeats the prime purpose of old age insurance.

UNEMPLOYMENT INSURANCE

Unemployment insurance was instituted in Germany in 1927, covering all manual, domestic and agricultural workers in low income groups. Administration was by an autonomous body with local, district and national offices. Rates were set at 3½ per cent, with employers and employees contributing equally. Soon after the plan went into effect, the depression caused a sharp curtailment of benefits; thereafter the program was supported by government subsidy and became a system of relief rather than insurance. Failure of the program can be attributed to the fact that unemployment is not an actuarial risk and unemployment insurance cannot, therefore, have a sound financial basis.

American unemployment insurance has not as yet faced the test of an economic decline. However, it stands to reason that a substantial increase in unemployment will quickly eat up the reserves of the system and an extended depression will throw beneficiaries on the relief roles when the insured period has expired.

1. Sulzbach, W.: German Experience with Social Insurance. Studies in: Individual and Collective Security, no. 2, National Industrial Conference Board, New York, 1947, 134 pp. Price \$1.

CONCLUSION

Two trends are apparent in the history of German social insurance: general expansion of expenditures, benefits and coverage; and increasing use of government subsidy to supplement employer and employee contributions. In 1885, 4.7 million Germans were insured; expenditure for social insurance amounted to 52.2 million marks. By 1931, 23.3 million persons were covered and expenditures had risen to 5,571.7 million marks. While private contributions rose 217 per cent from 1913 to 1930, federal contributions went up 746 per cent, totaling 475.7 million marks in the latter year. In 1929, health insurance took care of an average of 855,000 sick persons a day; 2 million persons were receiving old age and invalidity benefits, and 1,275,000 received unemployment benefits. One German in six—11,189,000 persons—drew part or all of his income from social insurance.

The reasons for this expansion of German social insurance lie more in its value to politicians and bureaucrats than in its accomplishments. Costs of administration were high. The programs restricted the freedom of the worker to spend his money as he pleased. Assessments on the employer were actually shifted to the worker, who was no better off than under private insurance. During and after the depression, when the programs had degenerated into elaborate relief schemes, the insurance myth was maintained. Unfortunately, once the programs had been put into operation, a bureaucracy was built up which had a strong economic interest in the growth of the system. Moreover, the plans were politically popular. Had German social insurance remained on its original modest scale, it would have avoided many of the difficulties which led ultimately to its collapse.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Act: Applicability to Student Nurse.—The plaintiff filed a petition for compensation under the Workmen's Compensation Act for an injury alleged to have been sustained during the course of her employment by the defendant hospital. From a determination of the Workmen's Compensation Bureau's dismissing the petition for lack of jurisdiction, the plaintiff appealed to the Court of Common Pleas of New Jersey, Hudson County.

On Feb. 6, 1939, the petitioner was accepted by the defendant as a candidate to become a nurse. Prior to this acceptance, she had passed an entrance examination and had paid the established fee. For five months she served as a probationer. Thereafter she was formally accepted by the defendant as a student nurse for a period of training which was to last three years, during which time she was to receive no wage or compensation except room, board and incidentals. At the completion of the training course she was to receive a certificate from the hospital and be eligible to take the examination for registered nurses conducted by the state board. The petitioner's duties were as follows: compulsory attendance at chapel at 6:30 a. m., then breakfast and "at 7 o'clock we are given the night report of the night nurses, we are assigned to patients, take temperatures, give bed pans, make beds, give all treatments, such as enemas, give hypodermics, intramuscular injections and medicines." She worked six days or nights a week, was entirely subject to the control and supervision of the head nurse and in return therefore received room and board plus certain items of clothing and various nursing and dietetics books.

The petitioner alleged that she sustained an injury on March 29, 1940, by accident arising out of and in the course of her employment. The defendant, however, denied that the relationship of employer-employee existed between the parties.

It is fundamental, said the court, that as a necessary prerequisite for recovery under the Workmen's Compensation Act, there must exist the relationship of employer-employee.

After a careful consideration of the record in this case, continued the court, it is my opinion that the status of a student nurse who renders service to the public and to the defendant hospital for the pecuniary gain of the latter is similar to the old time apprentice. The apprentice renders services to his master in some trade or employment with the primary purpose of learning the trade, business or profession of the master. The apprentice usually receives no remuneration for his services outside of his board and lodging. For services rendered by him, no doubt the master received payment from the public. I am not unmindful of the fact, the court continued, that one of the purposes of the defendant hospital in permitting a student nurse to practice her art on the public is to increase her efficiency. Another material purpose is to derive pecuniary gain for the services performed. The plaintiff entered into an agreement with the hospital whereby she rendered services to the hospital and its patients. Can anyone doubt the value and importance of such services? Indeed, it is to be seriously doubted that a general hospital could function without the services of student nurses. In return, she received instruction, training, food and lodging and incidental equipment. This constituted her compensation, and she earned it. Accordingly the court held that the employer-employee relationship did exist between the hospital and the student nurse.—*Heget v. Christ Hospital*, 58 A. (2d) 615 (New Jersey, 1948).

Governmental Hospitals: Right of State Hospital Board to Discharge Employees.—The plaintiffs sued for damages for their alleged wrongful and malicious discharge from employment at the state hospital and from a judgment for the defendants appealed to the Supreme Court of Arizona.

The plaintiffs contended that they were wrongfully discharged from their employment by the state hospital board, without just cause or reason, and that such action was taken by the board contriving wickedly, maliciously and wrongfully to injure them in destroying their good name, credit and reputation. The defendants argued that the state hospital board was strictly within its jurisdiction and acting in a quasijudicial capacity in reviewing and determining the cause of the dismissal of the plaintiffs by the superintendent of the hospital and that therefore the board was clothed with immunity from civil liability for any action taken by it in its official capacity, regardless of any allegation of ulterior motive.

It is a general rule of universal application, said the Supreme Court, dating back to the earliest days of the common law, that judges of courts of general jurisdiction are not liable to civil actions for their judicial acts; i. e., the privilege of a judge while engaged in the performance of his judicial function is absolute. This rule of judicial immunity is not continued, but in its protection to judges proper, the court continued, but extends also to any other official who performs a judicial function while acting in a quasijudicial capacity. The statutes of Arizona authorize the superintendent of the state hospital board to discharge an employee for cause. An employee so discharged may on request have the cause of his discharge reviewed and determined by the state hospital board. Continuing, the Supreme Court said that for aught that appears in the plaintiffs' complaint the state hospital board was strictly following the procedure prescribed by statute when the action herein complained of was taken which resulted in separating the plaintiffs from the state payroll. Since it was thus acting strictly within its jurisdiction, it was clothed with immunity from civil liability unless the allegation that its action was taken maliciously makes a difference. There is a division of authority in applying the rule of immunity from civil liability, said the Supreme Court, where it is charged that the act of the quasijudicial officer is done maliciously or corruptly, but the majority rule is that where the quasijudicial officer is acting within his jurisdiction he is not civilly liable, even though he acts corruptly or maliciously. His motives are immaterial. The Supreme Court held that the state of Arizona was committed to this majority rule; the judgment of the trial court dismissing the plaintiffs' complaint was therefore affirmed.—*Wilson v. Hirst*, 193 P. (2d) 461 (Ariz., 1948).

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Archives of Dermatology and Syphilology, Chicago

57:141-280 (Feb.) 1948

- *Microscopic Grading of Cancer and Its Practical Implication. W. F. Edmundson.—p. 141.
- Cutaneous Manifestations of Gonococcal Infection: Keratosis Blennorrhagica Treated with Penicillin. J. B. Miale and W. V. Singletary.—p. 151.
- Acanthosis Nigricans and Its Association with Cancer. Helen O. Curth.—p. 158.
- Role of Liver in Congestive Eczema. F. J. Eichenlaub and R. A. Osbourn.—p. 171.
- Relation of Keratosis Seborrheica and Keratosis Senilis to Vitamin A Deficiency. W. B. Dublin and Bernice M. Hazen.—p. 178.
- Tuberculosis Miliaris Disseminata Chronica in Negro. S. Irgang.—p. 184.
- Lupus Erythematosus Profundus (Kaposi-Irgang): Historical Review and Report of Case. H. L. Arnold Jr.—p. 196.
- Urticaria Caused by Heat, Exertion and Excitement: Report on 22 Cases Among American Soldiers in Japan. H. Sigel.—p. 204.
- *Epidermal Absorption of Drugs. F. P. Luduena, Jean K. Fellows and R. L. Driver.—p. 210.
- Status of Erythema Elevatum Diutinum. F. C. Combes, H. T. Behrman and Rose Saperstein.—p. 219.
- Cheese Mite Dermatitis Occurring in United States. N. P. Anderson and H. C. Fishman.—p. 227.
- Vogt-Koyanagi Syndrome. H. T. Behrman, O. L. Levin and J. Laval.—p. 235.
- Lichen Sclerosus et Atrophicus of Vulva. Evelyn G. Wallace and R. Nomland.—p. 240.
- Surgical Management of Onychia and Onychogryposis. W. A. Swanker.—p. 255.

Microscopic Grading of Cancer.—Edmundson points out that the grading of cancer is based on the fact that among growths there is individuality depending on the type of tissue from which the neoplasm has sprung, the site of growth, the type of its growth and the degree of differentiation and dedifferentiation (anaplasia) of the cells of the tumor. Broders graded malignant tissue as 1 if more than 75 per cent of the cells are differentiated, as 2 if 50 per cent to 75 per cent are differentiated, as 3 if 25 per cent to 50 per cent are differentiated and as 4 if zero to 25 per cent are differentiated (or if 75 per cent to 100 per cent are dedifferentiated; i. e., anaplastic). The putting into practice of this criterion literally, necessitating the actual counting of cells, is impracticable, but the associated cytologic changes and morphologic characteristics of the tissue are more easily seen. Since these are direct results of the cellular activity, they furnish accurate evidences of malignant potentialities. The personal factor plays a large part in this system of grading, and objections have been made on the basis of the danger of personal error. The author evaluates other objections that have been made to the system of grading suggested by Broders and to other systems. He believes that Broder's method is the best basis for classification of malignant tumors. The nomenclature pertaining to squamous cell carcinoma and adenocarcinoma in particular is far from standardized. Many surgeons believe that it is an adequate basis on which to prognosticate or to aid in judging treatment. MacCarty has listed nine hundred and fifty terms applied to neoplastic disease and has suggested a system that would seem to be an improvement over the present lack of system. A summary of MacCarty's proposed system of nomenclature is given.

Epidermal Absorption of Drugs.—Luduena and his associates made experiments designed to test percutaneous absorption of selected drugs on the clipped skin of rabbits, using as a leading vehicle 2-(2-ethoxyethoxy)-ethanol ("carbitol"), which is absorbable and can act as a carrier without damage to the skin, another vehicle being octyl alcohol. Epidermal absorption was demonstrated for the following drugs, according to their

typical systemic effects: epinephrine, penicillin and choline esters dissolved in "carbitol" or a mixture of "carbitol" and octyl alcohol. Octyl alcohol mixed with propylene glycol or ethyl alcohol was also effective for promoting the absorption of epinephrine. With the same vehicles, insulin and dihydro-beta-erythroidine were not absorbed epidermally, thus refuting a previous claim made of positive results for insulin. With similar vehicles, large doses of penicillin were not absorbed from human skin. A mixture containing "aerosol OT" (dioctyl sodium sulfosuccinate) damaged the skin. For percutaneous absorption vehicles should be relatively noninjurious, but even under most favorable conditions the dosage of drugs tends to be large and absorption irregular for systemic effects. For superficial (intra-dermal) penetration some of the successful vehicles reported in this paper might be useful for certain drugs, when such action is desired.

Blood, New York

3:329-470 (April) 1948

- Clinical Significance of Cardiac and Respiratory Adjustments in Chronic Anemia. H. L. Blumgart and M. D. Altschule.—p. 329.
- *Irreversible Toxic "Inclusion Body" Anemia: Rarely Recognized Syndrome; Clinical and Experimental Studies. M. H. Fertman and C. A. Doan.—p. 349.
- Blood Response and Nitrogen Balance Following Liver Extract. R. West.—p. 361.
- *Pathogenesis of Anemia in Acute Glomerulonephritis. Estimations of Blood Production and Blood Destruction in Case Receiving Massive Transfusions. C. P. Emerson.—p. 363.
- Studies on Destruction of Red Blood Cells. IV. Thermal Injury: Action of Heat in Causing Increased Spheroidicity, Osmotic and Mechanical Fragilities and Hemolysis of Erythrocytes; Observations on Mechanisms of Destruction of Such Erythrocytes in Dogs and in Patient with Fatal Thermal Burn. T. H. Ham; Shu Chu Shen; Eleanor M. Fleming and W. B. Castle.—p. 373.
- Mechanism of Transplacental Isoimmunization. P. Levine.—p. 404.
- Erythroblastosis Fetalis in Negroid Infants. A. S. Wiener and I. B. Wexler.—p. 414.
- Autohemagglutinins and Hemolysins with Hemoglobinuria and Acute Hemolytic Anemia, in Illness Resembling Infectious Mononucleosis. L. B. Ellis, O. J. Wollenman and R. P. Stetson.—p. 419.
- Primary Nonfamilial Hemolytic Anemia. J. M. Stickney and F. J. Heck.—p. 431.
- Genetic Relation and Clinical Differentiation of Cooley's Anemia and Cooley's Trait. Geneva A. Daland and M. B. Strauss.—p. 438.
- Study of Thalassemia Minor in Three Generations of an Italian Family. R. W. Heine and Margaret Ruth Read.—p. 449.
- Prophylaxis of Hookworm Anemia-Deficiency Disease. W. O. Cruz and R. Pimenta de Mello.—p. 457.
- Study of Sickling of Young Erythrocytes in Sickle Cell Anemia. Janet Watson.—p. 465.

Irreversible Toxic "Inclusion Body" Anemia.—Fertman and Doan direct attention to a form of anemia that is characterized by peculiar "inclusion bodies" in the circulating red blood cells. They were first reported by Heinz in 1890. They are readily distinguished from Howell-Jolly bodies, siderocytosis and classic reticulocytosis by their characteristic appearance, distribution and staining reactions. They have gone undetected in most routine clinical laboratories probably because they are difficult to demonstrate in the usual Wright-Giemsa stained and mounted blood films. The attention of the authors has been focused on this phenomenon by the discovery in the blood of an elderly physician with an unexplained refractory anemia, which terminated fatally. After the discovery of "inclusion bodies" in the patient's erythrocytes, it was determined that erythrol tetranitrate was the only drug which had been taken for many months prior to and coincident with the development of the anemia, and to which the patient may have acquired an idiosyncrasy. Since this peculiar anemia persisted and continued to progress even several weeks after the presumed toxic agent was discontinued, some permanent irreversible damage must have been suffered by the erythropoietic tissues. Experimental procedures were undertaken. "Bodies" with similar staining characteristics were reproduced in cats with large oral doses of erythrol tetranitrate and other nitrates. These were generally accompanied by a temporary fall in the red cell count, followed by recovery on withdrawal of the drug.

Anemia in Acute Glomerulonephritis.—Emerson calls attention to the frequent occurrence of anemia in Bright's disease and uremia and presents the case of a soldier, aged 27, who was hospitalized early in an initial attack of acute glomerulonephritis with manifestations of arterial hypertension, hematuria, albuminuria and nitrogen retention, and who was under continuous

observation for fifty days. Studies during this period were concerned primarily with the mechanisms responsible for rapidly developing anemia. Hematologic data were obtained before and after massive transfusion therapy. The administration of group O whole blood containing incompatible anti-A isoagglutinins in the first series of transfusions failed to improve the anemia but initiated a sustained reticulocyte response. Following this therapy there was evidence of increased blood destruction involving both the recipient's and the normal donor erythrocytes. Data obtained following a second series of transfusions employing plasma-free group O red cells, administered during a recovery phase when renal function had improved, indicated that blood destruction had largely abated and that hemopoietic activity was normal. Two factors of undetermined origin are believed to have been implicated in the pathogenesis of anemia in this case: one, the occurrence of abnormally rapid blood destruction, and the other, impairment of blood formation. Both phenomena were associated with the presence of nitrogen retention, despite which, however, a prompt erythropoietic response followed the transfusion of whole blood with quantitative replacement of patient's red cells with donor erythrocytes, suggesting that previous bone marrow inactivity was not attributable to "toxic suppression."

Bulletin of the Los Angeles Neurological Society

13:1-68 (March) 1948

- Angiomas of Cranial Vault: Report of Case with Some Remarks as to Their Pathology and Surgical Treatment. C. B. Courville and A. J. Murietta.—p. 1.
Electroencephalographic Findings in Measles Encephalitis. C. Marsh.—p. 15.
Notes on Pathology of Cranial Tumors: 6 Tumors Originating in Marrow of Diploe. C. B. Courville.—p. 19.
Etiology of Multiple Sclerosis: Short Review. H. E. Andren.—p. 42.

Bulletin New York Academy of Medicine, New York

24:209-270 (April) 1948

- Psychosomatic Approach in Medical Practice. G. E. Daniels.—p. 209.
Energy Metabolism in Obese Patients. L. H. Newburgh.—p. 227.
*End Results of Thoracolumbar Sympathectomy for Advanced Essential Hypertension. J. W. Hinton.—p. 239.
Morphological Basis for Menstrual Bleeding: Relation of Regression to the Initiation of Bleeding. J. E. Markee.—p. 253.

Thoracolumbar Sympathectomy for Essential Hypertension.—Hinton subjected 455 patients, 183 men and 272 women, with essential hypertension to the two stage thoracolumbar sympathectomy during the period from February 1942 to November 1947. Most of these patients were in the advanced stage of hypertensive disease. The total deaths in and out of the hospital were 74, or a total mortality of 16 per cent. The causes of deaths occurring in the hospital were in the order as follows: cerebral, cardiac and renal, while in the deaths outside the hospital the order was as follows: cardiac, cerebral and renal. One should clearly differentiate, in evaluating the end results, whether there has been surgical intervention in the early or in the advanced stages of hypertensive disease. Of 164 patients followed for one year, 93 had a postoperative diastolic pressure of 110 or lower and 71 a postoperative diastolic pressure of above 110. A somewhat more dramatic response is demonstrated by the impressive number of patients whose postoperative diastolic blood pressure falls sharply after exercise, even when their resting pressure has been at higher levels. Such a drop in pressure may well be the result of peripheral dilatation in the muscle bed, unopposed, as, in the intact organism, by splanchnic constriction, thus averting the customary summated response of blood pressure elevation, as in the routine preoperative response to exercise. That relatively advanced age is not necessarily a contraindication to thoracolumbar sympathectomy was demonstrated by the operative results in a group of 72 patients between the ages of 50 and 59 years. The hospital death rate was lower than that of the group as a whole and the two year follow-up revealed that a large percentage of the patients continued to maintain a satisfactory diastolic level. The author feels that thoracolumbar sympathectomy has a definite place in the treatment of hypertensive vascular disease, but its role in cases of advanced disease is chiefly that of palliation.

California Medicine, San Francisco

68:255-330 (April) 1948

- Radicular Pain in Upper Extremity. J. B. Doyle.—p. 255.
Degenerative Lesions of Shoulder as Cause of Pain. A. J. Neufeld.—p. 259.
Psychosomatic Considerations in Gastroenterology. L. M. Morrison.—p. 261.
Breast Cancer in Mice. M. B. Shinkin.—p. 264.
What Are Basic Needs for Public Health in California? D. M. Bissell.—p. 270.
Psychogenic Rheumatism: Musculoskeletal Expression of Psychoneurosis. E. W. Boland.—p. 273.
Section on General Practice. Its Problems, Its Goals, Its Responsibilities. E. A. Royston.—p. 280.
Diverticulosis and Diverticulitis of Colon. Study of 100 Cases. R. W. Quinn.—p. 283.
Surgical Treatment of Horseshoe Kidney. F. Farman.—p. 286.
Relation of Private Physician to Cancer Control Program. L. C. Kinney.—p. 288.

Canadian Medical Association Journal, Montreal

58:317-426 (April) 1948

- Diffuse Collagen Diseases: Morphological Correlation. G. L. Duff.—p. 317.
The Person with Ulcerative Colitis. W. D. Ross.—p. 326.
Adrenal Medullary Pheochromocytoma. C. W. Holland and S. C. Strickland.—p. 330.
Compound Fractures. A. W. M. White.—p. 334.
Radiologic Aspects of Peptic Ulcer. A. C. Singleton.—p. 338.
Comparative Study of Continuous Spinal and Cyclopropane with Curare. Dorothea M. Wardrop.—p. 343.
*Diagnosis of Tuberculosis in Presence of Silicosis. J. H. Lee.—p. 349.
Hemoglobin Levels at Different Ages. L. B. Pett and G. F. Ogilvie.—p. 353.
Uncomplicated Duodenal Ulcer (Physiology and Etiology). D. MacDonald.—p. 356.
Vertical Deviations. J. McGillivray.—p. 361.
Femoral Hernia Following Inguinal Herniorrhaphy. L. B. Fratrik.—p. 365.
Mikulicz's Disease. T. G. Heatin and E. H. Shannon.—p. 368.
Mesothelioma of Pleura. M. H. Campbell and D. W. Penner.—p. 371.
Relationship of Urethral Caruncle to Carcinoma of Urethra. M. Rauter and C. Schneiderman.—p. 373.
Study of 150 Cases of Pneumonia. C. B. Rich.—p. 376.

Diagnosis of Tuberculosis in Presence of Silicosis.—Lee investigated 100 patients with silicosis for the presence of tuberculosis. A complicating active tuberculous condition must be suspected if cough is becoming increasingly productive or if hemoptysis, pain or loss of weight is present. Limited chest expansion on one side, rales and elevated temperature are suspicious signs. Radiologic changes suggestive of a tuberculous process include coalescing shadows, especially if unilateral or increasing in extent, large hilus glands, cavitation or displaced trachea. The absence of a cutaneous reaction to a 10 mg. dose of old tuberculin probably rules out tuberculosis unless the patient is acutely ill. The only definite proof of the existence of a complicating tuberculosis in silicosis is the demonstration of tubercle bacilli.

Connecticut State Medical Journal, Hartford

12:289-400 (April) 1948

- *Prefrontal Lobotomy: A Preliminary Report. Jane E. Oltman, Bernard S. Brody and S. Friedman.—p. 302.
*Antacid Therapy for Peptic Ulcer: Use of New Synthetic Resin. M. Kraemer.—p. 305.
Modern Concept of Respiration After R. F. Pitts. I. G. Shaffer.—p. 310.
Double Gall Bladder Demonstrated by Oral Cholecystography. C. C. Verstandig and D. B. Moore.—p. 314.
Periarteritis Nodosa: Case Report. W. MacShepard and K. T. Phillips.—p. 316.
Welfare Medical Care. W. H. Horton.—p. 319.
This is General Practice. W. W. Rieke.—p. 326.

Prefrontal Lobotomy.—Oltman and her associates say that 107 patients have undergone prefrontal lobotomy at the Fairfield State Hospital in Connecticut since May 1946. Most of these patients had chronic mental illness with an extremely unfavorable prognosis. The results of lobotomy were encouraging in that 86 of the patients showed some improvement, 15 remained unimproved, 5 died and the results in 1 could not be evaluated because of physical complication. Thirty per cent of the patients were sufficiently improved so that they would leave the hospital on an indefinite visit. Convulsive seizures represented the most frequent complication, occurring in approximately 10 per cent of the group. Hostile, aggressive, chronically disturbed patients appear to derive the greatest benefit from this operative procedure.

Synthetic Resin for Antacid Ulcer Therapy.—Kraemer says that in 1938, while seeking an improved antacid, he discussed acid adsorbents with a water purification engineer who had investigated the iron exchange properties of certain synthetic plastic resins. The antacid synthetic resin with which the author is concerned in this report is a phenol formaldehyde condensation product, which is known as "amberlite IR IV" in the chemical trade and which has been given the pharmaceutical trade name "resinat." When this resin was compared with calcium carbonate and with aluminum hydroxide, it was found that its neutralizing power was less than that of calcium carbonate but better than of the aluminum hydroxide suspension. The author discusses the usefulness of this resin in treating peptic ulcer, presenting diets and medication schedules. So far 100 persons with gastric ulcer have been treated with this resin. Eighteen of these patients were hospitalized because they required blood transfusions on account of severe hemorrhage or required surgical treatment. The bleeding patients did rather well with the resin treatment. Of the 82 ambulant patients 76 have been free of symptoms. In all, 85 per cent of the patients have been kept symptom free on the ulcer regimen using resin as the only antacid. None of the patients have had side effects as a result of resin therapy. Particularly noticeable is the lack of complaints regarding constipation and diarrhea and freedom from bloating and gas.

Iowa State Medical Society Journal, Des Moines

38:77-134 (March) 1948

- Principal Clinical Features of Patent Ductus Arteriosus and Tetralogy of Fallot. R. L. Parker.—p. 85.
Degenerative Changes of Knee Joint Following Internal Derangement. R. K. Ghormley.—p. 88.
Gallstone Hens: Report of 5 Cases. W. L. Downing.—p. 95.
Review of Meningitis Cases Seen in Raymond Blank Memorial Hospital During Years 1945 and 1946. C. L. Burr and J. M. Standefer.—p. 100.
Improved Technic of Sternal Puncture. R. F. Birge.—p. 105.

38:135-180 (April) 1948

- Comments on College of Medicine. C. Jacobsen.—p. 136.
Postgraduate Medical Education at the State University of Iowa College of Medicine. T. L. Carr.—p. 140.
State University of Iowa Hospitals: Continuing Contribution to Health of People. G. Hartman.—p. 155.

Journal of Bone and Joint Surgery, Boston

30-A:263-540 (April) 1948. Partial Index

- Painful Shoulder: Observations on Role of Tendon of Long Head of Biceps Brachii in Its Causation. H. H. Hitchcock and C. O. Bechtol.—p. 263.
Congenital Pseudarthrosis: Follow-up Study After Massive Bone-Grafting. H. B. Boyd and K. W. Fox.—p. 274.
Peritendinous Fibrosis of Dorsum of Hand. R. E. Van DeMark, J. D. Koucky and F. J. Fischer.—p. 284.
Pseudarthrosis in Lumbosacral Spine. M. Cleveland, D. M. Bosworth and F. R. Thompson.—p. 302.
Cartilaginous-Cup Arthroplasty in Ununited Fractures of Neck of Femur. J. R. Moore.—p. 313.
Management of Chronic Osteomyelitis, Secondary to Compound Fractures. F. C. Reynolds and P. Zaepfel.—p. 331.
Surgical Procedure for Lymphedema of Extremities: A Follow-up Report. H. B. Macey.—p. 339.
Fractures of Lower End of Humerus in Children. D. P. McDonnell and J. C. Wilson.—p. 347.
Lateral Skeletal Traction in Treatment of Forearm Fractures. E. H. White and J. M. Stevenson.—p. 374.
Bridging of Bone Defects. A. Gibson and B. Loadman.—p. 381.
Primary Closure of Compound-Fracture Wounds with Immediate Internal Fixation, Immediate Skin Graft, and Compression Dressings. A. G. Davis.—p. 405.
Primary Anterior Congenital Dislocation of Hip. H. R. McCarroll.—p. 416.
Results of Treatment of Irreducible Congenital Dislocation of Hip by Arthrodesis. C. J. Frankel.—p. 422.
Dislocation of Pisiform. E. W. Immeimann.—p. 489.
Compression of Spinal Cord Due to Direct Extension From Tuberculous Pulmonary Abscess. J. R. Norcross.—p. 492.
Morton's Metatarsalgia. H. Winkler, J. B. Feltner and P. Kimmelstiel.—p. 496.

Surgical Procedure for Lymphedema of the Extremities.—Macey points out that many cases of lymphedema progress to the point of disability as a result of the development of recurrent cellulitis and lymphangitis, or the enlargement of the extremity to elephantine proportions, or a combination of both. He reviews the history of operative procedures for the treatment of disabling lymphedema and describes the one first

reported from the Mayo Clinic in 1940. The extremity should be elevated before the operation for two days and drained of most of the lymphedematous fluid. If cellulitis is present, penicillin should be used two to three days preoperatively and continued postoperatively until the second procedure of the operation is completed. Diagrams accompanying the description of the surgical technic show (1) the cutaneous incision of the leg and (2) the subcutaneous dissection of the diseased tissue and the application of split skin grafts over the muscle sheaths and peritendinous structures. Of the 7 patients whose cases are reviewed 5 have had excision of all of the lymphedematous tissue below the knee, and 1 patient has had only the first stage procedure on the medial aspect of the leg. One patient had lymphedema of the upper extremity and has had complete excision of the diseased tissue below the elbow, combined with skin grafting. In this instance of excision and skin grafting of the upper extremity, the result was excellent. Of the 6 patients in whom the lower extremity has been treated, 4 have had excellent results. In 1 of the 2 remaining patients, superficial ulceration in the graft developed, but the patient has been active and the postoperative decrease in the size of the extremity has been maintained. In the remaining case a long follow-up was not obtainable but at the end of one year the skin grafts were in good condition and the elephantine proportions of the extremity had been relieved. The author feels that recurrent cellulitis associated with chronic lymphedema is best treated by excision of the disease-bearing area and by skin grafting.

Primary Closure of Compound Fracture Wounds.

This report by Davis is based on 150 consecutive cases of compound fracture. Twenty-eight patients were treated during the years when neither sulfonamide drugs nor penicillin were available. In the next four years 83 patients were treated with sulfonamide drugs. In the last two years 39 patients were treated parenterally with penicillin, and in addition a sulfonamide compound was dusted into the wound. During the last five years a blood bank has facilitated the generous use of transfusions, and a diet high in protein has been prescribed. It is sometimes impossible and frequently inadvisable to do combined immediate treatment of shock, debridement, internal fixation and closure. For this reason different approaches, depending on the immediate requirements of the individual patients, are outlined in 7 case reports. One hundred and thirty-one, or 87 per cent, of the wounds healed by first intention. About midway in the series it became apparent that the most frequent cause of failure of healing by first intention was the attempt to preserve questionable skin. It is now realized that questionable skin edges jeopardize the result long after the deep tissues have healed. When adequacy of the circulation in a skin flap is doubtful, the tourniquet is removed; if vitality of the flap is not demonstrated, the flap is resected. When longitudinal flaps can be mobilized and drawn together to cover the denuded area, this is done in preference to placing a split graft over the defect. Frequently it is possible to bring the wound edges together without tension by undermining them and using relaxation sutures of stainless steel wire. The results of the described treatment have been superior to those obtained by previous methods. Improved results are attributed, first, to the compression dressing; second, to immediate coverage of the surface defect with skin or a split skin graft, and, third, to immediate or delayed internal hairline reduction, with metallic fixation. The hazard of primary suture is greatly reduced by penicillin and whole blood.

Journal of Immunology, Baltimore

58:337-422 (April) 1948

- Toxic and Antigenic Properties of Fractions Prepared from Complete Antigen of Shigella Dysenteriae. C. Tal and L. Olitzki.—p. 337.
Studies in Dysentery Vaccination: I. Passive Mouse Protection Test. M. L. Cooper and Helen M. Keller.—p. 349.
Studies in Dysentery Vaccination: II. Humoral Antibody Content of Sera from Children Convalescent from Dysentery. M. L. Cooper and Helen M. Keller.—p. 357.
Studies in Dysentery Vaccination: III. Immunity in Mice Injected with Vaccines of Shigella. M. L. Cooper and Helen M. Keller.—p. 361.
Reactions to Concentrated Influenza Virus Vaccines. J. E. Salk.—p. 369.
Studies with Antibiotic-Producing Strains of Escherichia Coli. S. P. Halbert and H. J. Magnuson.—p. 397.

Journal of Lab. and Clinical Medicine, St. Louis**33:397-520 (April) 1948. Partial Index**

- *Study of Response of Bacterial Populations to Action of Penicillin: Quantitative Determination of Its Effect on Organisms. Sophie Spicer and Diana Blitz.—p. 417.
- Effect of Cold Pressor Test on Glomerular Filtration and Effective Renal Plasma Flow. P. J. Talso, A. P. Crosley Jr. and R. W. Clarke.—p. 430.
- *Relation Between Structural and Functional Alterations of Liver. M. Franklin, H. Popper, F. Steigmann and D. D. Kozoll.—p. 435.
- Importance of Rate of Dye Removal in Bromsulfalein Test of Liver Function. C. Moses, Frances H. Critchfield and T. B. Thomas.—p. 448.
- Effect of Oral Administration of Casein Hydrolysate on Total Circulating Plasma Proteins of Man. B. F. Chow and Shirley De Biase.—p. 453.
- Method for Determination of Plasma Catalase and Values Obtained in Normal Adults. R. S. Dille and C. H. Watkins.—p. 480.
- Effect of Various Lethal Procedures and Thermal Injury on Capillaries. M. Priuzmetal, H. E. Kruger and H. C. Bergman.—p. 497.
- Mechanism of Delayed Death Following Thermal Trauma. H. C. Bergman, H. E. Kruger and M. Priuzmetal.—p. 506.

Response of Bacterial Populations to Penicillin.—

Experiments reported by Spicer and Blitz show that penicillin is capable of destroying susceptible bacteria by lysis or otherwise under normal cultural conditions in amounts possible to maintain in the body of the patient. The destructive action of penicillin on sensitive bacterial strains is not complete. A residuum of viable organisms always remains, which is capable of withstanding the destructive action of the antibiotic but is inhibited from multiplying in its presence. Large and small amounts of the drug have the same inhibitory effect on these remaining organisms. The findings suggest that bacterial cultures do not constitute a homogeneous population but that individual members may possess different characteristics as to the manner of reaction under the influence of the antibiotic. Success of penicillin therapy depends directly on the number of residual organisms left viable after the initial treatment. The small numbers of residual viable organisms in strains of *Pneumococcus*, *hemolytic Streptococcus*, and some strains of *Staphylococcus*, as shown by tests, may account for the dramatic results so often obtained with penicillin when used in the treatment of acute infections caused by these organisms. On the other hand, the large numbers of viable organisms found of the *Streptococcus viridans* strain may account for the protracted treatment with penicillin necessary in cases of subacute bacterial endocarditis in which *Str. viridans* is the most frequent etiologic agent.

Structural and Functional Alterations of Liver.—The histologic picture of the liver as seen in biopsy specimens obtained by aspiration or laparotomy from 130 patients with various types of hepatic disease, was compared by Franklin and his co-workers with tests of hepatic function performed at the time of biopsy. Thirty-five of these patients were repeatedly studied. The incidence of diffuse damage to hepatic cells, focal necrosis, regeneration, distorted reconstruction, periportal activity, fatty metamorphosis, and mobilization of Kupffer cells was compared statistically with the results of each of different hepatic function tests. A significant correlation was found between diffuse damage to hepatic cells and albumin/globulin ratio, cephalin-cholesterol flocculation, thymol turbidity, and retention of sulfobromophthalein sodium; a lesser degree with highly elevated serum bilirubin, reduced plasma vitamin A, increased prothrombin time, and slightly elevated alkaline phosphatase. Correlations were not elicited between parenchymal damage and total serum protein, total cholesterol, cholesterol-ester ratio, urinary urobilinogen, stool urobilinogen, alkaline phosphatase in general (and markedly elevated alkaline phosphatase specifically), nonprotein nitrogen or sedimentation rate. Focal necrosis, in contrast to diffuse damage to hepatic cells, was not associated with significant changes in hepatic function. The same was found with fatty metamorphosis. Regeneration showed a correlation with increased thymol turbidity. Distorted reconstruction of the lobular pattern (as seen in cirrhosis) was related to cephalin-cholesterol flocculation, thymol turbidity and elevation of sedimentation rate. Kupffer cell activity appeared related to elevated serum bilirubin and pathologic albumin/globulin ratio.

Journal of Nervous and Mental Disease, New York**107:207-312 (March) 1948**

- Cerebral Schistosomiasis: Report of 1 Proven and 2 Presumptive Cases. R. F. Perkins and A. Uihlein.—p. 207.
- Significance of Abdominal Electroencephalograms Prior to Electroconvulsive Therapy. R. M. Taylor and B. L. Pacella.—p. 220.
- Somato-Psychic Factors in Anxiety Neurosis. A. Ferraro.—p. 228.
- Role of Psychosis in Amyotrophic Lateral Sclerosis. J. W. Friedlander and B. J. Kesert.—p. 243.
- Heredity as Etiologic Factor in Homosexuality. R. A. Darke.—p. 251.
- Comparison of Psychodiagnostic Findings of Graphology and Hand Psychology. E. J. Scheimann.—p. 269.
- Amelioration of Anxiety Symptoms Accompanying Healing of Peptic Ulcer: A Case Report. D. K. Ziegler.—p. 276.

Journal of Thoracic Surgery, St. Louis**17:143-282 (April) 1948**

- Surgical Management of Carcinoma of Lower Two-Thirds of Esophagus and Cardiac End of Stomach. J. W. Strieder.—p. 143.
- Congenital Esophageal Atresia and Tracheoesophageal Fistula. C. G. Lyon and S. G. Johnson.—p. 162.
- Bronchoscopic and Esophagoscopic Cinematography. P. H. Holinger, G. C. Anison and K. C. Johnston.—p. 178.
- Esophageal Hiatal Hernias of Short Esophagus Type: Etiologic and Therapeutic Considerations. A. M. Olsen and S. W. Harrington.—p. 189.
- *Resection of Coarctation of Aorta with Subclavian-Aortic Anastomosis: Report of Case with Discussion of New Clamp for Aortic Resection and Anastomosis. H. H. Bradshaw, J. F. O'Neill and Felda Hightower.—p. 210.
- *Aortic-Pulmonary Anastomosis For Pulmonary Stenosis. W. J. Potts.—p. 223.
- Study of Variations of Bronchopulmonary Segments of Right Upper Lobe. J. G. Scannell and E. A. Boyden.—p. 232.
- Collateral Ventilation. P. R. Baarsma and M. N. J. Dirken.—p. 238.
- Collateral Ventilation in Man. P. R. Baarsma, M. N. J. Dirken and E. Huizinga.—p. 252.
- Studies on Experimental Phosgene Poisoning: II. Pulmonary Artery Pressure in Phosgene-Poisoned Cats. Mary H. Gibbon, H. D. Bruner, R. D. Boche and J. S. Lockwood.—p. 264.
- Localization of Pulmonary Cavities by Modified Roentgenographic Technique. J. Gordon.—p. 274.

Resection of Coarctation of Aorta.—Bradshaw and his co-workers performed resection of aortic coarctation with subclavian aortic anastomosis on a boy aged 16. There was no suggestion after operation of any paralysis in the legs or left arm. Death from pulmonary edema and atelectasis ensued twenty-six hours after intervention. Necropsy revealed that the anastomotic side was partly obstructed by a thrombus. Long intestinal clamps were used to occlude the vessel ends while this anastomosis was being completed, and it was difficult to keep the cut ends of the vessels immobile in accurate end to end approximation. The fine sutures being used broke with annoying frequency. An attempt was made to design a clamp which would firmly grasp the aortic wall between parallel bars without crushing, and which would permit the vessel ends to be accurately approximated to each other and immobilized. Such a clamp was made by the Department of Physiology, Jefferson Medical College, Pa.; the instrument consists of two clamps having parallel jaws, the pressure on the jaws being accurately adjustable by means of a knurled nut; an octagonal rod can be inserted into square holes in each clamp so that it holds them in constant alignment with each other and permits them to be moved to or from each other. A handle can be attached to either end of the bar; this handle can be moved through a wide range with respect to the bar and locked in any position desired. When in use the clamps can be removed from the bar or left on it and placed transversely across the aorta one above and one below the segment to be resected. The jaws can be closed to any desired pressure by turning the knurled nut and the aorta can thus be occluded. By placing the aorta in each clamp equidistant from the tips of the clamp, the aortic ends will be brought in accurate end to end position when the clamps are joined by the bar and approximated. This instrument was used experimentally on 15 dogs. The aorta was approached in each animal through the left side of the chest, and segments of aorta varying in length from 4 to 12 mm. were excised.

Aortic-Pulmonary Anastomosis for Pulmonary Stenosis.

—Potts performed aortic-pulmonary anastomosis on 29 children between the ages of 4 months and 12 years, 26 of whom had pulmonary stenosis (tetralogy of Fallot) and 3 had tricuspid atresia. There have been 4 deaths, or a mortality of 13.8 per

cent. Twenty-four of the 25 who survived the operation were definitely improved; cyanosis was largely relieved and the patients are living fairly normal lives. One survivor, a 4 month old child, was improved, but cyanosis was still present during crying. Postoperative complications have not been troublesome. In performing the anastomosis a clamp was used which encircles the aorta and pinches off a small lip of it to which a pulmonary artery can be anastomosed. At the same time the clamp allows plenty of blood to continue to flow through the partially constricted aorta. This technic, worked out in the experimental laboratories of Northwestern University Medical School, was slightly modified: The pulmonary artery is not tied to the anterior lip of the clamp only; instead, one end of the ligature is carried through the posterior lip of the clamp first and then through the anterior. The other end of the ligature is threaded through the same lips in the opposite direction. This brings the pulmonary artery to the aorta in better position for anastomosis. Microscopic study of sections cut from the walls of the anastomotic channels produced in dogs indicates that it is unnecessary in aortic-pulmonary anastomosis to appose the vessels intima to intima. Although intima to intima suture in general is preferable, the author does not believe that it makes any difference in this operation in which the differential in pressures is so great. While the most suitable age for operation is probably between 3 and 7 years, successful anastomoses were performed on 2 children below 1 year of age.

Journal of Urology, Baltimore

59:501-772 (April) 1948. Partial Index

- *Decapsulation of Kidney for Anuria Due to Sulfathiazole. I. J. Shapiro.—p. 538.
Massive Spontaneous Hemorrhage Into and Around Parenchymal Lesions of Kidney. L. Herman.—p. 544.
Malignant Adenoma of Kidney. R. Pearce.—p. 553.
Extensive Metastasizing Hypernephroma Associated with Massive Bilateral Adenoma of Adrenal. J. A. Taylor.—p. 557.
Spontaneous Disappearance of Pulmonary Metastases After Nephrectomy for Hypernephroma. Four Year Follow-Up. L. T. Mann.—p. 564.
Bilateral Embryonal Adenomyosarcoma of Kidney (Wilms Tumor). M. F. Campbell.—p. 567.
Mixed Tumor of Kidney Lipo-Myo-Hemangioma. N. J. Heckel and G. D. Penick.—p. 572.
*Detection of Cancer Cells in Urine: Clinical Appraisal of Papanicolaou Method. C. J. Schmidlapp II and V. F. Marshall.—p. 599.
Experiences with Stained Smears of Cells Exfoliated in Urine in Diagnosis of Cancer in Genito-Urinary Tract: Preliminary Report. R. Chute and D. W. Williams.—p. 604.
Urethral Stricture: Pathologic Study. D. E. Beard and W. E. Goodyear.—p. 619.
Peyronie's Disease and Its Treatment with Radium. R. E. Fricke and J. H. Varney.—p. 627.
Sclerosing Lipogranuloma of Testicular Adnexae. N. B. Powell and Elizabeth B. Powell.—p. 631.
Genital Self-Mutilations by Mental Patients. L. M. Beilin and J. Grueneberg.—p. 635.
Persistent Cloaca in Five Year Old Boy. W. J. Baker and J. L. Wilkey.—p. 642.
Renal Complications of Hyperparathyroidism. E. Burns and C. M. Whitehead.—p. 664.
Renal Tuberculosis with Special Reference to Cases of Long Standing and Those Treated with Streptomycin. N. F. Ockerblad and R. P. Weltmer.—p. 674.
Use of Estrogens in Treatment of Bladder Tumors. R. Lich Jr. and O. Grant.—p. 682.
Suprapubic Suction Vesical Drainage: New Appliance. F. J. Pyle and R. P. Henderson.—p. 687.
*Persistent Cloaca in Female: Report of 2 Cases Corrected by Operation. O. S. Lowsley.—p. 692.

Decapsulation of Kidney for Anuria.—Shapiro describes 2 cases in which anuria occurred after the administration of the sulfathiazole and in which the probable mechanism was the toxic action of the drug on the renal tubules. Bilateral decapsulation was carried out in both patients with prompt cessation of the anuria and ultimate complete recovery. Early decapsulation in similar cases is urged because of the danger that irreversible renal changes may occur if the anuria persists too long.

Cancer Cells in Urine.—Schmidlapp and Marshall review observations on 333 cases in which the urine sediment was studied by the Papanicolaou method for the detection of exfoliated cancer cells. The group comprised not only patients with genitourinary neoplasms, but also many patients with non-neoplastic urologic diseases. The results have been better than expected. Falsely positive reports have been few. A suspicious smear report from the laboratory means cancer nearly half

the time, and therefore dictates more study by the usual urologic means as well as by this method. A negative laboratory report decreases the possibility that cancer of the urinary tract is present but does not reliably rule it out. The method as now applied is of little value in the detection of benign tumors and is of greatest value for cancer of the bladder (but not benign papilloma). It is advisable to examine more than one specimen. The authors caution against clinical utilization of the results of one who is just beginning to use this method until a fairly large series has been tested against the usual data, especially biopsy. It is not intended that this method should supplant or exclude recognized methods but rather that it may provide another tool for the detection and study of urinary cancer.

Persistent Cloaca in the Female.—Towsley reports the histories of 2 girls, aged 9 and 7 respectively, who underwent an operation for persistent cloaca. The rarity of this condition is indicated by the fact that a search of the literature revealed only 4 cases. A child thus afflicted is completely ostracized, and the psychologic reaction is so intense that the condition should be corrected before the child reaches school age. The creation of a continent anus was accomplished in both of these cases. Even though a sphincteric muscle cannot be identified, a continent anus may be made by carefully separating the muscle fibers of the perineal floor and fixing the anal wall to the skin of the perineum. The physical condition of these 2 patients showed rapid and great improvement. They gained weight and strength. The "hangdog" expression left them and they assumed the appearance and behavior of normal girls.

Minnesota Medicine, St. Paul

31:361-444 (April) 1948

- Rectalgia Associated with Intestinal Diseases: Symptomatic Treatment. J. A. Borgen.—p. 361.
Proctology and General Practitioner. W. C. Bernstein.—p. 363.
Diverticulitis of Colon. W. G. Sauer.—p. 365.
Hemostatic and Absorbable Dressings in Anorectal Surgery. J. K. Anderson.—p. 369.
Serologic Observation in Toxemias of Pregnancy. R. T. La Vake.—p. 372.
Three Months in a State Mental Hospital. A. T. Laird.—p. 376.

Nebraska State Medical Journal, Lincoln

33:113-152 (April) 1948

- Despecialization of Psychiatry. F. G. Ebaugh.—p. 115.
Plastic Repair of Major Cutaneous Defects. C. W. McLaughlin, Jr.—p. 120.
Rheumatic Fever. R. M. Allen and B. J. Lamb.—p. 124.

New York State Journal of Medicine, New York

48:673-816 (April 1) 1948

- One-Stage Suprapubic Prostatectomy with Primary Closure of Bladder. W. C. Eikner.—p. 793.
Schistosomiasis. W. G. Hayward.—p. 796.
Transurethral Surgery in Patients Past Eighty Years of Age. W. A. Milner.—p. 799.
Occupational Disease—Insurance Viewpoint. H. D. Sayer.—p. 801.

New England Journal of Medicine, Boston

238:493-544 (April 15) 1948

- Orthopedic Appliances in Rehabilitation of Patients with Spinal Cord Injuries. D. S. Bickers.—p. 545.
*Ulceroglandular Tularemia Treated with Streptomycin: Report of 2 Cases. R. E. Lesser and S. Miller.—p. 554.
Effect of Surgical Operations on Bromsulfolein Retention Test. H. J. Tagnon, G. F. Robbins and Mary P. Nichols.—p. 556.
Problem of Sulfonamide Resistant Hemolytic Streptococci. T. L. Hartman and L. Weinstein.—p. 560.
Role of Pleuropneumonia Like Organisms in Genitourinary and Joint Diseases. L. Dienes, Marian W. Ropes, W. E. Smith and others.—p. 563.
Right-Sided Aorta. Persistent Truncus Arteriosus. Patent Interventricular Septum. Persistent Fifth Aortic Arch on Left.—p. 567.
Metastatic Renal Cell Carcinoma.—p. 571.

Ulceroglandular Tularemia Treated with Streptomycin.—Lesser and Miller report use of streptomycin in treatment of 2 patients with tularemia. The first patient, a man, aged 39, involved no particular problem once the diagnosis had been established. He was given streptomycin in daily doses of 3 Gm. for seven days. The response to this treatment was excellent. Case 2 presented a more complicated problem. Although the

clinical response to streptomycin was definite, the subsequent course of the disease indicates probable inadequacy of dosage initially. It may also indicate decreased effectiveness of treatment when a delay occurs between the initial phase of the disease and the institution of therapy. Evidence for relapse as manifested by serologic and clinical changes may be correlated with the retention of living bacteria within the recovered patient. The inability of streptomycin to effect lasting remission in case 2 was probably due not only to this fact but also to development of resistance by the organism to the antibiotic agent. The initial amount of streptomycin used may be considered inadequate in the light of current knowledge.

North Carolina Medical Journal, Winston-Salem

9:173-232 (April) 1948

- Hormones in Urology. R. M. Nesbit and J. Lapides.—p. 173.
 *Clinical Manifestations of Glioblastoma Multiforme. Review of Fifty Cases. F. H. Hesser.—p. 179.
 Primary Cancer of Lung. H. H. Bradshaw.—p. 186.
 Better Health—Today and Tomorrow—Through Medicine. W. C. Davison.—p. 189.
 X-Ray Examination in Rupture of Spleen. C. L. Gray.—p. 191.
 Treatment of Prolonged Labor Due to Uterine Inertia. J. F. Donnelly.—p. 195.
 *Primary Staphylococcal Pneumonia. D. P. Boyette.—p. 200.

Clinical Manifestations of Glioblastoma.—Hesser presents the histories of 3 patients with glioblastoma, which demonstrate that unobtrusive but significant clinical features can slip by unnoticed. In the first case the clinical diagnosis was thrombosis of the right posterior cerebral artery associated with congenital aneurysm, with a history of subarachnoid hemorrhage. At necropsy, a large invasive tumor of the glioblastoma group was found deep in the right temporo-occipital lobe. Extensive necrosis, cystic degeneration and hemorrhagic extravasation were evident. In the second case the clinical diagnosis was epidemic encephalitis and possible tumor of the brain, but necropsy revealed a large cystic and necrotic glioblastoma multiforme. The third case resembled the first one in that symptoms of cerebral and subarachnoid hemorrhage were associated with more definite evidence for tumor of the brain. In an effort to analyze the clinical characteristics of these tumors more critically, 50 cases, diagnosed "glioblastoma multiforme" by operative biopsy (40 cases) or at necropsy (10 cases), were reviewed. There were about twice as many men as women. The onset of symptoms was insidious with gradual progression in 25 cases, rapid or apoplectic in 20 and gradual with sudden or episodic aggravation in 5. Stereoscopic roentgenograms of the skull were made preoperatively in 47 patients and demonstrated changes in 13. Electroencephalography was of diagnostic and localizing value in 13 of the 28 cases in which it was done. Pneumoencephalography gave confirmatory diagnostic information preoperatively in every instance in which it was performed. The data presented indicate pitfalls in the differential diagnosis of malignant tumor of the brain from other varieties of intracranial diseases. These include: age and the presence of arteriosclerosis and/or hypertension; ictus suggesting cerebrovascular disease; lack of localizing symptoms or signs; temporary clinical improvement; normal eyegrounds; mental symptoms suggesting toxic, inflammatory or degenerative cerebral disorder, and overemphasis on historic or other data to the exclusion of subsequent clinical developments. Clinical features favoring the diagnosis of glioblastoma multiforme included: short duration of symptoms or episodic aggravation, headache with vomiting, mental disturbance, convulsions or syncope, neurologic signs, changes in cerebrospinal dynamics, abnormal electroencephalogram and roentgen changes. If any doubt in diagnosis exists, it is better to err in the direction of looking for tumor of the brain than to consider sparing the patient the risk of pneumoencephalography. Contraindications to this procedure are few.

Primary Staphylococcal Pneumonia.—Boyette says that between 1936 and 1947 there were 27 cases of primary staphylococcal pneumonia in Watts Hospital, 5 of which were fatal. Complications occurred in 10 of the 27 cases. In the 14 cases treated with penicillin since it was introduced in 1943 there has been only 1 case of empyema and no deaths. Penicillin, intramuscularly, intrapleurally and by inhalation has been the factor responsible for lowering the mortality rate and the

incidence of complications. It is to be assumed that with the liberal use of sulfadiazine and penicillin in modern practice many cases of staphylococcal pneumonia are nipped in the bud and therefore go unrecognized. Staphylococcal pneumonia is not dreaded now as it formerly was, but it still demands respect as a virulent disease which is controlled by vigorous therapy.

Public Health Reports, Washington, D. C.

63:425-468 (April 2) 1948

- Studies of Patients Discharged from Tuberculosis Sanatoria: I. Method of Collecting Basic Data From Central Record Systems. Agnes W. Brewster and R. C. Fletcher.—p. 427.
 Some Economic and Emotional Problems of Tuberculosis Patient and His Family. Sophia Bloem.—p. 448.
 Absorption of Bacteriostatic Quantities of Fatty Acid From Media and Large Inocula of Tubercle Bacilli. B. D. Davis.—p. 455.

63:469-500 (April 9) 1948

- Read Ahead in Public Health. L. A. Schrele.—p. 472.
 *Health of Arc Welders in Steel Ship Construction: A Review. W. C. Dreesen and others.—p. 488.

Health of Arc Welders in Ship Construction.—This report by Dreesen and his associates presents the clinical and environmental findings of a cooperative investigation into the respiratory health hazards of shipyard arc welders who were working with coated electrodes on bare steel or galvanized steel. Physical examinations were made on 4,650 persons including 2,950 men and 1,700 women employed in seven shipyards. About 1 out of every 4 persons examined was a non-welder, and the medical findings of this group served to control the clinical observations on welders. Some of the conditions noted, which were possibly related to welding exposure, include a respiratory symptom complex (pharyngitis, rhinitis and conjunctivitis), arc welder's siderosis, cardiovascular hypotonia and rather characteristic occupational stigmas of certain arc welders caused by burns of hot slag or molten metal. These conditions were either infrequent or of a low order of severity. Blood studies failed to reveal serious dyscrasias. Gastrointestinal symptoms were infrequent. There was no indication that welding fume predisposed to pulmonary tuberculosis. In general the concentrations of welding fume and gas observed in the environmental phase of the study were relatively low and the clinical findings were minimal.

South Dakota Journal of Medicine, Sioux Falls

1:91-138 (March) 1948

- Metabolic and Degenerative Diseases in Relation to Climate. C. A. Mills.—p. 91.
 Herpetic Infections in Infants and Children. J. A. Anderson.—p. 94.
 Rural Medical Care and General Practice. D. Slaughter.—p. 104.

Southern Medical Journal, Birmingham, Ala.

41:285-388 (April) 1948. Partial Index

- Mesothelial Mediastinal Cysts ("Pericardial Cysts") Differential Diagnosis of Shadows Continuous with Anterior Inferior Mediastinum. G. Cooper Jr., V. W. Archer and J. R. Mapp.—p. 285.
 *Boeck's Sarcoid in Children. R. J. Reeves, G. J. Baylin and P. A. Jones.—p. 295.
 Observations on Treatment of Detachment of Retina. F. P. Calhoun Jr.—p. 311.
 Treatment of Simple Long Oblique or Spiral Fractures of Shaft of Tibia. L. K. Loomis.—p. 317.
 *Penicillin in Drops for Prophylaxis Against Ophthalmia Neonatorum: Single Instillation Method. H. C. Franklin.—p. 320.
 *Effect of Caronamide on Penicillin Therapy. H. C. Sweet, O. P. J. Falk and D. Agar.—p. 326.
 Combined Quinine-Plasmoquin and Quinine-Pentaquine Treatment of Relapsing Vivax Malaria. C. G. Spicknall and L. L. Terry.—p. 338.
 Accidental Generation of Arsine Gas in Industry. C. A. Nau.—p. 341.
 Facial Paralysis in Otolaryngology. J. B. Farrior.—p. 348.
 Glaucoma Following Cataract Extraction. W. C. Owens.—p. 357.
 Relation of Vascular Apparatus to Rheumatoid Arthritis. A. D. Wallis.—p. 362.
 Use of Dicumarol as Adjunct to Treatment of Congestive Heart Failure: Results in Controlled Series of 61 Cases. G. M. Anderson and E. Hull.—p. 365.
 Ten-Year Cures in Carcinoma of Female Breast. L. C. Cohn.—p. 376.
 Diagnosis of Hydronephrosis. W. H. Toulson.—p. 379.

Boeck's Sarcoid in Children.—According to Reeves and his associates different organs and tissues are involved in sarcoidosis. The disease has been seen most frequently among Negroes. Of the 13 children analyzed in this series, 9 were Negro and 4 white. The ages of the children varied between 9 and 14 years. The authors feel that the disease may have

been overlooked in many younger children. After presenting several case histories, the authors stress that disease in children appears the same and runs the same course as in adults, involving in varying degrees the skin, lymph nodes, eyes, bones, lungs and many other tissues. The lesions in mediastinum and lungs tend to clear without demonstrable fibrosis. The usual distribution of the enlarged lymph nodes and the involvement of the nose and eyes aid in the differential diagnosis. The blood studies are often pathognomonic: eosinophilia, monocytosis, increase in the globulin content with a reversal of the albumin-globulin ratio. The disease may be confused with tuberculosis, Hodgkin's disease, sarcoma, leukemia, or the fungous infections. The correct diagnosis is usually reached by skin or lymph node biopsy.

Penicillin for Prophylaxis Against Ophthalmia Neonatorum.—Franklin says that for a five month period penicillin in drops was used for prophylaxis in the eyes of each newborn infant delivered at the John Gaston Hospital, Memphis, Tenn. The mothers of the infants studied were nearly all charity patients, of whom 85.3 per cent belonged to the Negro race. Penicillin was used in the form of the crystalline sodium salt of penicillin. A concentration of 2,500 units per cubic centimeter of sterile isotonic sodium chloride solution was used. A single instillation was given. A total of 1,177 infants was studied in the nursery and in the home during the first two weeks of life. One and one-tenth per cent of the infants exhibited pus in the eyes while in the nursery. This percentage is approximately one half of that observed when a multiple instillation method was used under less favorable conditions and is approximately one sixth the incidence observed in a previously reported series following silver nitrate prophylaxis.

Effect of Caronamide on Penicillin Therapy.—The crystalline compound caronamide, which is 4'-carboxyphenylmethanesulfonamide, is used to check the rapid excretion of penicillin by the kidneys. Sweet and his associates in their studies on the use of caronamide made an effort to establish optimum penicillin-caronamide dosage schedules. They describe observations on reduced penicillin dosage with increased time intervals. Studies were also made to determine whether caronamide would add to the effectiveness of oral penicillin. The toxicity of penicillin was investigated. The authors have given caronamide to 59 patients for an average period of six to seven days, the longest being eighteen days and the shortest two. In 6 instances nausea occurred, but only in 1 instance was it necessary to stop the drug because of the severity of the nausea. In 1 instance a generalized erythematous rash developed, which was caused by penicillin rather than caronamide. Caronamide appears to decrease the renal loss of penicillin, making it possible to increase the time interval between penicillin injections to at least four hours and to decrease the daily amount of penicillin needed by at least one half. Caronamide has shown no evidence of hepatic injury, and only occasionally produces nausea and vomiting. The authors feel that the drug should be withheld in frank renal deficiency. Penicillin ingested orally has been demonstrated to bring about effective therapeutic level when given with caronamide.

Southern Surgeon, Atlanta, Ga.

14:227-286 (April) 1948

- Penicillin in Treatment of Intra-Abdominal Infection. J. E. Hamilton and B. Greenspan.—p. 227.
- Appendectomy: Technic for Total Excision. C. H. Taylor.—p. 236.
- Appendectomy: Aspects of Diverticula of Duodenum. F. M. B. Slater and W. H. Parsons.—p. 240.
- Application War Experiences Civilian Chest Casualties. E. B. Hay.—p. 248.
- *Familial Sciatica Due to Herniated Disks. J. M. Meredith.—p. 258.
- Tumor of Carotid Body. H. C. Dahle.—p. 264.
- Early Carcinoma of Prostate. J. H. Semans.—p. 273.
- Cysts of Falciiform Ligament. J. S. Brown Jr.—p. 278.

Familial Sciatica Due to Herniated Disks.—Meredith describes a family in which the father and 5 of his 6 children had or have sciatica. Six operations for removal of protruded disks at the fourth or fifth lumbar interspaces or both have been necessary to date in this sciatica-afflicted family. None of the 6 patients had a history of a traumatic episode. All were in the fourth or fifth decade of life when operated on. Degenerative

changes seem to predispose to herniation of the nucleus pulposus and such changes may have been the most important etiologic factor of disk protrusion in this family. It is possible that a congenital defect is present in some cases of lumbar protruded disk, especially in those patients in whom there has been no definite traumatic history, as in all 6 of the familial cases herein described.

Tennessee State Medical Assn. Journal, Nashville

41:115-154 (April) 1948

- Psychiatry by General Practitioner. W. C. Porter.—p. 115.
- Malignant Lesions of Rectum, Rectosigmoid and Sigmoid. D. W. Smith.—p. 119.
- Paralysis of Larynx. F. D. Woodward.—p. 128.
- Medical Treatment of Duodenal Ulcer. P. B. Bleecker.—p. 131.
- Rectovaginal Fistula. W. W. Pyle.—p. 135.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

56:193-252 (April) 1948

- Congenital Cystic Disease of Liver. L. Chaffin.—p. 193.
- Treatment of Peritonitis: Review of 186 Cases. R. H. Lee.—p. 193.
- Gigantic Ovarian Cyst Developing in Thecoma: Problems Encountered in Surgical Management. W. C. Reiner.—p. 205.
- Conversion of Otoscope Into Infant Laryngoscope. A. C. Kirchhof and A. Burns.—p. 208.
- Studies on Thyrotoxicosis. J. Hertz.—p. 209.
- *Propylthiouracil: Its Use in Preoperative Treatment of Severe and Complicated Hyperthyroidism. E. C. Bartels.—p. 226.
- *Spinal Anesthesia in More Than Five Thousand Vaginal Deliveries. W. C. Rogers.—p. 236.
- Statistical Review of 241 Consecutive Cesarean Sections. T. W. Adams.—p. 243.

Propylthiouracil in Preoperative Treatment of Hyperthyroidism.—Clinical experience with propylthiouracil in the preoperative treatment of 300 patients with moderate to severe hyperthyroidism indicates that it is uniformly effective in reducing the basal metabolic rate when given in the daily dose of 200 mg. for primary hyperthyroidism and 300 mg. for adenomatous goiter with hyperthyroidism. Significant toxic manifestations were observed in 6 of the 300 patients treated. In one case a fever reaction occurred. Five patients had depressive changes in the white blood cells; in one this change was typical agranulocytosis. The occurrence of these reactions indicates that propylthiouracil is not a completely harmless drug and that patients receiving it require careful observation. Lugol's solution (strong iodine solution U. S. P.) is now combined with propylthiouracil in all patients with primary hyperthyroidism. The quick action of Lugol's solution produces a more prompt subjective improvement but tends to cause slight delay in the return of the basal metabolic rate to normal. Patients with primary hyperthyroidism respond with an approximate daily drop of 1 per cent in the basal metabolic rate. No death occurred after thyroidectomy in the 300 patients treated with propylthiouracil.

Spinal Anesthesia in Vaginal Deliveries.—The cases reviewed by Rogers include all patients delivered vaginally from September 1943, when spinal anesthesia was first used for deliveries, to July 1947. The total number of vaginal deliveries occurring in this forty-six month period were 5,837, in 5,067 of which spinal anesthesia was used and in 770 nitrous oxide. From 3 to 10 mg. of tetracaine hydrochloride in 1.5 to 2 per cent dextrose solution is used. This solution makes it relatively easy to control the height of the anesthetic. The average dose used is 6 mg. tetracaine, which will ordinarily produce complete anesthesia for one to two hours. The anesthetic is administered with the patient lying on her left side, the head of the table being elevated 2 or 3 inches (5.1 to 7.6 cm.). There were no maternal or fetal deaths and no neurologic complications. Spinal anesthesia is not an obstetric panacea, but when judiciously used affords a safe means of painless delivery.

West Virginia Medical Journal, Charleston

44:75-96 (April) 1948

- Carcinoma of Colon and Rectum. H. C. Myers, A. K. Bush and M. Lea.—p. 75.
- Trichobezoar: Report of Case. R. J. Wilkinson and A. Sheade.—p. 79.
- Postmortem Cesarean Section Delivery of Twins, with Survival: Case Report. F. H. Dobbs.—p. 80.
- Office Treatment of Syphilis with Penicillin. D. V. Hatton.—p. 83.
- Renal Anomalies: Case Report. C. K. Pearlman.—p. 84.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Annals of Rheumatic Diseases, London

7:1-62 (March) 1948

- Heberden's Nodes: Clinical Characteristic of Osteo-Arthritis of Fingers. R. M. Stecher.—p. 1.
Pain in Arm: A Review. H. Lovell Hoffman.—p. 9.

British Journal of Ophthalmology, London

32:129-192 (March) 1948. Partial Index

- Further Case of Iridoschisis. A. Loewenstein, J. Foster and S. K. Sledge.—p. 129.
Note on Intra-Vitreous Penicillin. T. S. Kelly.—p. 153.
Complication of Intracapsular Cataract Extraction. F. A. Williamson-Noble.—p. 161.
Attempt to Treat Perforated Eye with Subconjunctival Penicillin. F. R. Neubert.—p. 162.
Use of Anti-Allergic Drugs in Treatment of Phlyctenular Ophthalmia. C. F. Bowes.—p. 163.
Intra-Mural New Vessels in Occluded Retinal Vein: Clinical Description. I. C. Michaelson.—p. 164.
Implant with Bridges for Attachment of Muscles. E. Rosen.—p. 166.
Pathology of Mucous and Salivary Gland Tumors in Lacrimal Gland and Relation to Extra-Orbital Mucous and Salivary Gland Tumors. (Studies on Orbital Tumors). E. Godtfredsen.—p. 171.

British Journal of Urology, London

20:1-56 (March) 1948

- Mishaps of Prostatic Resection. R. J. Silverton.—p. 2.
Solitary Cyst of Kidney: Case Report. R. A. Smith.—p. 8.
Epididymectomy: Alternative Technique. A. Miller.—p. 13.
Circumcision of Adult. J. R. Elder.—p. 17.
Primary Carcinoma of Ureter. F. E. Stock and C. Wells.—p. 19.

British Medical Journal, London

1:485-532 (March 13) 1948

- Where Are We Going? Medicine in Planned Economy. F. Roberts.—p. 485.
Health of 407 New Students. J. Pemberton.—p. 490.
Recognition of Toxicogenic Bacterial Strains in Vitro. S. D. Elek.—p. 493.
Speransky's Method of Spinal Pumping in Rheumatoid Arthritis: Review of 4 Cases. O. Savage.—p. 496.
Diverticulitis Presenting as Emphysematous Cellulitis of Leg: Clinical Report on 2 Cases. R. L. G. Dawson and R. H. Hardy.—p. 498.
Recurrent Renal Lithiasis. A. D. Wright.—p. 499.

1:533-584 (March 20) 1948

- Epilepsy. C. Symonds.—p. 533.
Psycho-Analytic Concept of Origin of Depression. W. C. M. Scott.—p. 538.
Significance of Harrison's Grooves. J. Naish and H. R. E. Wallis.—p. 541.
"Myanesin" as Relaxant in Children. W. H. Armstrong Davison.—p. 544.
Treatment of Gold Dermatitis by BAL. N. R. W. Simpson.—p. 545.
"Amellin" for Diabetes. H. Whittaker.—p. 546.
Pre-Erythrocytic Stage of Human Malaria, Plasmodium Vivax. H. E. Shortt, P. C. C. Garnham, G. Covell and P. G. Shute.—p. 547.

1:585-626 (March 27) 1948

- De Formatione Ovi Et Pulli. H. A. Harris.—p. 585.
Environmental Factors Influencing Health and Efficiency in Warships. F. P. Ellis.—p. 587.
*Permanent Homonymous Quadrantanopia After Migraine. W. M. Rich.—p. 592.
*Phlebothrombosis Decubiti and Prevention of Pulmonary Embolism. H. Bailey.—p. 594.
Treatment of Thyrotoxic Heart Disease by Methyl Thiouracil. W. E. Clarke.—p. 597.
Penicillin and Gonorrhea: Analysis of 150 Cases Treated by Single-Injection Method. G. C. R. Downing.—p. 599.

Permanent Quadrantanopia After Migraine.—Rich says that, although it is well known that migraine often is accompanied with visual hallucinations, it is not generally known that it may lead to permanent visual damage. He describes a woman in whom permanent homonymous quadrantanopia developed after twenty years of repeated attacks of idiopathic migraine. According to Peter, perimetry locates ophthalmic migraine in the visual cortex. It is probably due to spasms in the small vessels of the cuneus. Repeated attacks of spasm in the small vessels may result in permanent occlusion of the vessel with softening of the brain tissue, the functional process then becoming organic. A review of the literature revealed only 13 other cases of this type.

Phlebothrombosis and Pulmonary Embolism.—Diagnosis of phlebothrombosis must be considered when the temperature chart shows unexplained repeated slight elevations. The condition is more prone in persons past the meridian of life, and the highest incidence is between the ages of 50 and 60. If the patient has undergone an operation about a week previous to development of the condition, more particularly if there was herniotomy, hysterectomy, resection of the rectum, prostatectomy, cholecystectomy or operation for perforative appendicitis, and if the patient has been nursed with a pillow placed beneath the knees, the clinician's thoughts should turn to the veins of the lower extremities. The whole lower extremities should be inspected in suspected early cases for swelling, fullness of veins and cyanotic tinge. Finger tip pressure should be applied over each saphenous opening, and, with a stroking motion, the finger is run down the course of each femoral vein, seeking a segment of unilateral localized tenderness. Then follow palpation of feet, legs and particularly the popliteal space. Homan's sign should be investigated, and femoral pulses should be compared. If, following a thorough examination, the diagnosis of femoral thrombosis is reasonably assured, removal of clots and interruption of the femoral vein will forestall many pulmonary emboli. In Britain there are few surgeons who have carried out femoral thrombectomy; the operation has received less attention than pulmonary embolectomy. The latter is a heroic measure requiring special facilities, special instruments and special skill. Femoral thrombectomy requires none of these things. Femoral thrombectomy is indicated: (1) when pulmonary embolism has occurred and the patient is yet in a fit condition to withstand operation and (2) when phlebothrombosis decubiti has been diagnosed with some precision. The author describes femoral embolectomy and says that if it should prove fruitless, ligation of the inferior vena cava should be resorted to.

Edinburgh Medical Journal

55:65-128 (Feb.) 1948

- Heart Failure of Pulmonary Origin. J. McMichael.—p. 65.
Hydatid Disease. D. M. Douglas.—p. 78.
Studies in Amnesia. W. R. Russell.—p. 92.
Blood Changes in the Aged. Part III. O. Olbrich.—p. 100.

Journal of Endocrinology, London

5:223-258 (Jan.) 1948

- Physiologic Activity of Optically Active Isomers of Thyroxine. Rosalind P. Rivers and J. Lerman.—p. 223.
Alloxan Diabetes and Liver Glycogen. E. Tuerkischer and E. Wertheimer.—p. 229.
Adrenalectomy and Replacement Therapy in Lactating Rats. S. J. Polley and A. L. Greenbaum.—p. 236.
Rapid Method for Volumetric and Numerical Estimation of Pancreatic Islets in Mouse. L. E. Mount.—p. 243.
Quantitative Determination of Small Amounts of Pregnenediol in Human Urine. I. F. Sommierville, Nancy Gough and G. F. Marrian.—p. 247.

Journal of Neurol., Neurosurg. & Psychiatry, London

11:1-72 (Feb.) 1948

- Cerebellar Abscess: Treatment by Excision with Aid of Antibiotics. J. Pennybacker.—p. 1.
*Observations on Cause and Mechanism of Symptom Production in Sciatica and Low Back Pain. M. A. Falconer, M. McGeorge and A. C. Begg.—p. 13.
*Neuropathologic Aspects of Thrombocytic Acroangiostrombosis: Clinic-Anatomic Study of Generalized Platelet Thrombosis. R. D. Adams, J. Cammermeyer and P. J. Fitzgerald.—p. 27.
Primary Cerebral Hydatid Cysts. G. Phillips.—p. 44.
Clinical Characteristics, Treatment and Rehabilitation of Repatriated Prisoners of War with Neurosis. M. Jones and J. M. Tanner.—p. 53.
Psychologic Symptoms and Physiologic Response to Exercise of Repatriated Prisoners of War with Neurosis. J. M. Tanner and M. Jones.—p. 61.

Symptom Production in Sciatica and Low Back Pain.—Falconer and his associates studied two groups of cases. The first group comprised 100 consecutive patients suffering from disabling sciatica or pain in the lower part of the back, who submitted to operation with a presumptive diagnosis of disk protrusion. The second group consisted of 76 patients with severe sciatica or pain in the lower part of the back, who were admitted initially to medical wards, where they were treated conservatively. Routine myelography performed in patients with sciatica or pain in the lower part of the back, admitted to

the hospital because of severity or intractability of symptoms, has indicated that intraspinal lumbar disk protrusions are present in almost all cases, whether the patient recovers from symptoms spontaneously or only after operation. Myelography, when repeated after spontaneous recovery from symptoms has occurred, usually shows that the intraspinal disk prolapse persists apparently unchanged. A number of further clinical observations are reported, which indicate that pain in the lower part of the back is caused by the disk prolapse alone, presumably through implication of the sinuvertebral nerve of Luschka, and that sciatica occurs only when the disk is prolapsed so that it impinges on a nerve root in its extrathecal course at the level of either of the lower two lumbar intervertebral disks. Secondary changes, probably of intraneural edema, appear within the affected nerve root, which contribute to the production of symptoms by pulling the nerve root tight against the prolapsed disk, thereby causing angulating and other strains within it. These strains, in their turn, excite afferent impulses within the nerve, which on reaching the sensorium produce a sensation of pain referable to the peripheral distribution of the affected nerve root. A slight blocking in conductivity through the compressed segment of nerve root accounts for the associated muscular, sensory and reflex disturbances. The spontaneous remission of symptoms, which often occurs in sciatica, can result from a resolution of the neural changes without an associated resolution of the disk prolapse. In treating sciatica and pain in the lower part of the back, conservative measures, with application of the principle of rest to the lumbar aspect of the spine, should always be tried in the first instance; they are often successful. Surgical treatment should be considered only when conservative measures fail and disability is appreciable.

Neuropathologic Aspects of Thrombocytic Acroangiothrombosis.—Adams and his co-workers review the neurologic and neuropathologic observations in 4 cases of thrombocytic acroangiothrombosis. This is a rare disease of unknown causation, which begins acutely, runs a rapidly progressive course and usually causes death in a few days or weeks. The leading clinical features were fever, purpura, anemia, thrombopenia and symptoms of cerebral disorder, such as muscular weakness, hemiplegia, convulsions, confusion, stupor and coma. The most important pathologic changes were a striking increase in cellularity of the walls of arterioles and capillaries and thrombi of platelets. These vascular abnormalities were pronounced in the brain of each of the 4 patients and were sometimes associated with multiple small foci of parenchymal necrosis and petechial hemorrhages. The neurologic data in 14 reported cases are summarized. Clinically the disease must be distinguished from idiopathic thrombopenic purpura, disseminated lupus erythematosus, subacute bacterial endocarditis and rickettsial diseases. This usually is possible by taking into consideration the total clinical picture and the laboratory data. The diagnosis of the disease can probably be established by bone marrow biopsy, in which platelet thrombi and vascular hyperplasia can often be seen. The brain lesions are believed to represent a unique picture, unlike any other neurologic type of reaction to disease.

Lancet, London

1:469-504 (March 27) 1948

- Treatment of Rheumatoid Arthritis. W. S. Tegner.—p. 469.
Vesicocapsular Prostatectomy. R. O. Ward.—p. 472.
Anti-Histamine Drugs in Asthma. R. B. Hunter.—p. 474.
Gonococcal Meningitis Treated with Penicillin and Sulphamezathine. Report of a Case. B. P. Moore, M. J. G. Lynch, P. C. Reynell and W. H. Donald.—p. 476.
Determination of Hemoglobin: IV. Comparison of Methods for Determining Iron Content and Oxygen Capacity of Blood. E. J. King, M. Gilchrist, I. D. P. Wooton, J. R. P. O'Brien and others.—p. 478.

Proceedings of Royal Society of Medicine, London

41:133-186 (March) 1948. Partial Index

- Posture in Anaesthesia. J. K. Hasler.—p. 133.
Artificial Respiration. E. A. Pask.—p. 138.
Progress in Treatment of Malaria Infection and Some of Its Complications. D. Watson.—p. 155.
History of Cholera in Great Britain. E. A. Underwood.—p. 165.

Journal de Médecine de Lyon

29:259-296 (April 20) 1948

- Myxedematous Megacolon. P. P. Ravault, M. Plauchu and P. Guinet.—p. 259.
Epidemic Hepatitis. M. Girard and P. Fargetton.—p. 269.
*Crystalline Suspensions of Desoxycorticosterone in Treatment of Addisonian Syndromes. P. P. Ravault, M. Pont and A. Pothier.—p. 291.

Desoxycorticosterone in Addison's Disease.—Ravault and his co-workers treated 7 patients, 5 men and 2 women, between the ages of 20 and 41, who had Addison's disease, with desoxycorticosterone acetate in crystalline form in aqueous suspension by intramuscular route. Animal experiments on adrenalectomized dogs showed that the duration of the effect of the drug in aqueous suspension was much longer than that of the drug in oil. In the patients the dose of desoxycorticosterone acetate in 2 cc. of water varied from 50 to 150 mg. Satisfactory results suggest that the new method of administration may occupy a place halfway between injection in oil and implantation of pellets. The new method is indicated in mild cases of Addison's disease in which one injection of 50 mg. was effective for three weeks, while one injection of 100 mg. was effective for five to six weeks. Implantation of pellets may be preferred in grave cases of Addison's disease, but the new method of administration may be used temporarily to avoid hospitalization required for the implantation and to determine the need of the drug and its optimum dose. No untoward reactions occurred in those cases in which the dose of one injection was not larger than 100 mg. Mild edema resulted in 1 patient from a dose of 150 mg., but disappeared within a few days.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

92:605-680 (Feb. 28) 1948. Partial Index

- *Serum Hepatitis. W. J. Bruins Slot.—p. 608.
*Polytendinobursitis. D. Dorrepaal.—p. 618.
Complications of Asthmatic Attacks. S. Drukker.—p. 622.
Significance of Sugar Content of Blood and Urine in Treatment of Diabetes Mellitus. F. Gerritzen.—p. 625.
Early Diagnosis of Spondylarthritis Ankylopoietica (Bechterew's Disease). J. Goslings.—p. 627.
Splenectomy in 2 Cases of Anemia. A. J. C. Haex.—p. 631.
Rheumatic or Septic Endocarditis. C. A. van Hees.—p. 635.
Infection and Anemia. J. J. De Jong.—p. 641.
Focal Infection. H. C. van Leeuwen.—p. 647.

Serum Hepatitis.—Bruins Slot reports 2 men, aged 55 and 67, respectively, in whom hepatitis developed after repeated injections of plasma. In both of these cases of serum hepatitis, the gastrointestinal disturbances usually developing at the onset were absent. Many observers consider the so-called arspenamine icterus also as a form of serum hepatitis, which is transmitted by the injection needle. The pathologic anatomy of epidemic hepatitis, serum hepatitis and arspenamine icterus is identical.

Polytendinobursitis.—Dorrepaal reports several patients who showed signs of tendinitis in various parts of the body often associated with bursitis. The heart remained normal. This entity of polytendinobursitis must be differentiated from rheumatoid arthritis, rheumatic fever and fibrositis. The etiology of polytendinobursitis has not been clarified, but the case histories suggest that loss in general resistance and focal infection might play a part. Treatment consists in protecting the involved part from exertion, providing good food and perhaps additional vitamins and in treating the anemic state that might exist.

Nordisk Medicin, Stockholm

37:199-246 (Jan. 30) 1948. Partial Index

- Roentgen Diagnosis of Mitral Defect. H. Hemmingson.—p. 199.
*Continued Investigations on Relation of Erythema Nodosum to Tuberculosis. H. J. Ustvedt.—p. 201.
After-Examination of Student Nurses Inoculated with BCG. A. Beskow.—p. 206.
Exudative Pleurisy and Pregnancy. O. Lassen.—p. 215.
Spontaneous Hypoglycemia—Insuloma. L. Thorling.—p. 217.

Relation of Erythema Nodosum to Tuberculosis.—Primary tuberculous infection was certain in 29 per cent of Ustvedt's 200 cases of erythema nodosum; tuberculous etiology was probable in 37 per cent, could almost surely be excluded

in 23 per cent and was improbable in 11 per cent. He concludes that in Norway only about two thirds of the cases of erythema nodosum can be assumed to be connected with primary tuberculous infection. In practice, every case of erythema nodosum should be treated as if due to tuberculosis until other cause is established.

Praxis, Bern

37:259-278 (April 15) 1948. Partial Index

- Myoneurovascular Glomera; Their Part in Pathogenesis of Post-Traumatic Ascending Pain, Cirroid Aneurysms and Coccygodynia. J. Veyrassat.—p. 259.
 *Histamine Contents of Blood in Patients with Ulcus. A. W. Surkes.—p. 264.
 *Analgesic Effect of Calcium in Metastasis of Cancer. J. Körbler.—p. 266.

Histamine in Blood of Patients with Ulcus.—Surkes determined the histamine content in the whole blood of 40 patients, 14 women and 26 men between the ages of 23 and 73, who had peptic ulcers demonstrated on roentgenologic examination. Thirty-two of them presented ulceration of the stomach, and 8 of the duodenum. The disease was chronic in all cases. The quantitative estimation of histamine in the blood was carried out by using Code's modification of the Barsoum-Gaddum method. In 28 patients the histamine values were normal; in 8 patients they were increased slightly, and in 4 patients there was a pronounced increase. The histamine contents were normal in 15 of 19 patients in whom the niche had disappeared and there was a mild increase in the remaining 4 patients. In 4 patients on whom gastrectomy was performed for ulcer of the stomach, the histamine in the blood was determined before and immediately after the surgical intervention. These patients presented a tendency to reduced histamine values after the intervention.

Calcium in Metastasis of Cancer.—Körbler treated 7 patients, 5 women between the ages of 44 and 75, who had cancer of the breast with bone metastases in the legs or ribs, 1 woman aged 51 with adenocarcinoma of the scalp and metastases in the legs and 1 man aged 57 who had cancer of the floor of the mouth with metastasis in the lower jaw, by intramuscular administration of a 10 per cent solution of calciumgluconogalactogluconate ("calcium Sandoz"). Ten cubic centimeters of the solution was injected daily on ten and twenty consecutive days. Pain caused by the metastases was relieved in all cases; this analgesic effect was only temporary in some of the patients but permanent in others. It was obtained with the first injection and in some cases after several injections only. Results were best in metastases in the region of the vertebral column after cancer of the breast and particularly during the first phase of such metastases in which pain may be severe in the absence of any roentgenologic manifestations. An additional, eighth, case is reported in a woman aged 45 who had severe pain associated with metastases of pelvic bones after mastectomy for cancer. She was treated with calcium compound for several weeks. The pain was relieved and calcareous deposits were demonstrated on roentgenologic examination. Although these deposits cannot explain the analgesic effect of the calcium, it is suggested that it might be possible to make these deposits radioactive by the action of neutrons and thus to produce a source of gamma rays within the metastasis.

Presse Médicale, Paris

56:149-153 (Feb. 28) 1948

- *Use of Male Hormones in Treatment of Cancer of Breast in Women. A. Sicard.—p. 149.
 Electric Shock Therapy Under Curare. L. Massion-Verniory, E. Dumont, R. Nicaise and H. Reinhold.—p. 150.

Male Hormones in Treatment of Carcinoma of Female Breast.—According to Sicard, the influence of the ovarian secretion on the development of carcinoma of the breast has been proved clinically and experimentally. Castration, either by surgery, irradiation or the administration of androgens, must be regarded as antagonistic, particularly to the development of metastases. The author has employed castration in a number of patients with osseous metastases. He found that the efficacy of surgical castration can be considerably increased by the

administration of testosterone. He describes the different dosage schemes that he employed in the administration of androgens either by intramuscular injection or by implantation of pellets. He now usually administers ten injections of 100 mg. of testosterone every three months. The effect of the implantation of pellets can eventually be complemented by intramuscular injections. To be effective, testosterone must be given in large doses, which eventually leads to the development of male characteristics such as change of voice, hair growth and hypertrophy of the clitoris.

Revista Clinica Española, Madrid

28:73-144 (Jan. 31) 1948. Partial Index

- *Observations of Salicylism as Basis of Treatment of Acute Rheumatic Endocarditis. Effects of Bicarbonate and Sodium Benzoate. E. Arjona, J. M. Alés and J. M. Segovia.—p. 92.
 Use of Phase Contrast Microscope in Diagnosis of Tumors. A. Bullen Ramirez.—p. 99.
 Hepatitis with Jaundice in Patients with Tuberculosis. V. Bozal Urzay and E. Nerin Mora.—p. 105.
 Surgical Treatment of Pulmonary Echinococcus. A. Pursell Menguez.—p. 111.
 *Syndrome of Amyotrophic Lateral Sclerosis of Traumatic Origin Treated Surgically. C. Jimenez Diaz and Obrador.—p. 120.
 *Menopausal Hyperthyroidism and Estrogens. P. De La Peña Regidor.—p. 123.

Salicylism in Treatment of Acute Rheumatic Endocarditis.—Arjona and his associates demonstrate that by administering relatively large doses of sodium salicylate and benzoate (8 Gm. for adults) for two or three days and by following this with smaller doses of 4 to 6 Gm., effective salicylism levels can be maintained. The administration of small doses from the beginning also permits useful levels to be attained, but when seventy-two hours go by before they are reached the disappearance of symptoms is delayed. Adequate salicylism levels can be maintained also by the rectal administration of these salts. Rectal administration is especially useful in cases in which symptoms of gastric intolerance appear. An enema of 8 Gm. in an adult, administered by the drip method, and later enemas providing 4 to 6 Gm. permit the maintenance of effective levels of the drug.

Surgical Cure of Amyotrophic Lateral Sclerosis of Traumatic Origin.—Jimenez Diaz and Obrador report a man, aged 48, who fifteen years previously had been in a traffic accident. He was unconscious for several hours and later complained of paresis in both arms and cervical pain. These symptoms subsided gradually, but motor disturbances remained. His hands became atrophied. He resumed his occupation at the end of a year, but force and movement in the hands were still impaired. He had a feeling of heaviness and of pain in the neck. His condition remained stationary for a number of years, but during the last year paresis and atrophy increased. Examination revealed increased reflexes of the lower extremities, and myelography disclosed an obstruction in the cervical column. Operation revealed great hypertrophy of the dura. Freeing the medulla by sectioning the ligamentum denticulatum effected prompt improvement in the motor activity of the hands. This proves the importance of the fixation of the medulla to the internal surface of the dura by the dentate ligaments. Patients with syndromes of the anterior motor neuron of the cervico-thoracic enlargement or of amyotrophic lateral sclerosis, who have a history of trauma, should be subjected to myelography so that possible mechanical obstruction may be detected, the surgical removal of which will produce a cure. The case demonstrates greater vulnerability of the motor fibers in the compressive processes. This explains the preponderance of motor and atrophic disturbances.

Menopausal Hyperthyroidism and Estrogens.—De la Peña Regidor reports the case of a woman, aged 33, who had symptoms of hyperthyroidism after successive removal of the right and left uterine adnexa. The conclusion was reached that her hyperthyroidism was the result of the cessation of the ovarian function. Administration of ovarian hormones checked indirectly the production of substances causing excessive function of the thyroid. The institution of this treatment had the desired effect.

Schweizerische medizinische Wochenschrift, Basel
78:217-240 (March 13) 1948. Partial Index

*Experiences at Canton Center in Zurich with Intensifying Screen Roentgen Pictures in 65,000 Examined Cases which were Reexamined for Clarification; Contribution to Preventive Medicine. F. K. Fischer and H. R. Schinz.—p. 217.

*Intracavity Therapy for Pulmonary Tuberculosis; Our First Results with Streptomycin. L. Tanner, L. Balsiger, P. Ochsner and O. Stamm.—p. 220.

Local Treatment of Tuberculous Lesions with Sulfones. N. Rist.—p. 224.

Fluorescent Screen Roentgen Pictures of Patients Reexamined for Clarification.—According to Fischer and Schinz, mass examination by roentgenograms made with the aid of the intensifying screen is to be considered as a gross method which only rarely will be an aid to definite diagnosis. Roentgenograms made with the aid of the intensifying screen of 2,823 (4.6 per cent) of 65,526 persons who were examined by this method during the period from June 1946 to July 1947 showed positive alterations which required reexamination for clarification. Only 2,532 of them were available for such reexamination. Eight hundred and fifty (29.8 per cent) proved normal, while positive clarification results were obtained in the remaining 1,682 persons; 808 (1.23 per cent) had pulmonary tuberculosis, and this was not known previously in 644 (0.99 per cent) of them, while it was known to the family physician in 164 cases (0.24 per cent). There were 37 open cases among the previously unknown cases and 8 open cases among those previously known. Of the 506 inactive, closed cases of pulmonary tuberculosis which were demonstrated on reexamination, 388 (0.59 per cent) had not been known previously and 118 (0.18 per cent) had been known previously. There were in addition 257 active closed cases, 219 of which were not known previously, while 38 were known. Diagnosis of closed active cases is of less importance prophylactically than that of the open cases, but is of the greatest importance to the patient. Control of these patients is essential, since transition from the inactive phase of the disease to the active phase may take place at any time. The same applies to the inactive closed cases.

Local Streptomycin Treatment in Pulmonary Tuberculosis.—Tanner and his co-workers treated 6 men with pulmonary tuberculosis and cavities demonstrated by tomography, with streptomycin. A total dose of 18 to 29 Gm. of the drug was injected through the chest wall directly into the cavity in fractional doses of 0.2 to 0.5 Gm. In 5 an additional 13.5 to 75 Gm. of the drug was administered by intramuscular route, so that the total dose of the drug varied from 42.5 to 97 Gm. The sixth patient had received 115 Gm. of the drug by the intramuscular route previously but without definite results. Treatment of this patient and another patient was a failure because the drug was expectorated and because of the resistance to the drug caused by the previous parenteral treatment with streptomycin. The other 4 patients showed a pronounced reduction in the size of the cavity after a short time. There was also a partial regression of the process in the lung; the amount of sputum and the number of bacilli were reduced. This method of treatment is recommended particularly for cases of pulmonary tuberculosis with cavities in which collapse therapy is not feasible, or in which it was ineffective. Daily introduction of 0.5 Gm. streptomycin in a 1 cc. solution into the cavity combined with 1 Gm. of the drug in two fractional doses per day by intramuscular route may be employed as the sole treatment or as a preparatory treatment for surgery. Untoward reactions may be avoided with careful technic. Not a single accident or dissemination was observed with six hundred local injections.

Semaine des Hôpitaux de Paris**24:633-654 (March 14) 1948. Partial Index**

Sternal Marrow in Evolutive Course of Nephritis. H. Metzger and J. G. Lévy.—p. 640.

*Melanophore as an Aid to Diagnosis of Pregnancy: Its Application and Value. L. Servantie and G. F. Moretti.—p. 642.

Melanophore in Diagnosis of Pregnancy.—Servantie and Moretti modified Hogben's *Xenopus* test for pregnancy by using frogs (*Rana esculenta*) in tests. Hypophysectomy was performed on the frogs under ether anesthesia. Although the discoloration of the animals becomes complete within five to six hours, it is advisable to examine microscopically the interdigital membrane of the posterior paw of the frog to verify whether

all the melanophores are punctiform without asperities or digitations. No animals should be used for pregnancy tests which do not present a complete contraction of the melanophores. The urine of the woman to be tested for pregnancy (one tenth of the weight of the frog) is injected into the dorsal lymph sac of the animal. The reaction was negative in two hundred instances in which the urine of normal men or women was injected into the frogs. The reaction was positive in one hundred instances in which the urine of pregnant women was injected into the frogs. An assay of the melanophore-expanding hormone was made in 36 women in whom the duration of pregnancy varied from one to nine months; the melanophoric index on the average varied from 2.1 in the first month of pregnancy to 1.7 in the ninth month of pregnancy. The index of expansion may be increased from 1.8 or 2 to 2.5 or 3 by bringing the urine in contact with kaolin or aluminum for twenty-four hours before it is injected into the hypophysectomized frog. The frog test is to be considered as a safe and specific test for pregnancy. It proved to be strongly positive in two instances in which the Brouha test was falsely negative.

24:829-890 (March) 1948. Partial Index

Primary Cancers of Lung. P. Nicaud.—p. 839.

*First Clinical Observation Concerning Effect of Vagotonine in One Case of Fatty Hepatomegalia of Pancreatic Origin. J. Caroli and J. Etève.—p. 850.

*Temporal Arteritis. L. Justin-Besançon, H. P. Klotz, A. Rubens-Duval and H. Sikorav.—p. 863.

Effect of Vagotonine (Pancreatic Hormone).—Caroli and Etève report a case of fatty liver associated with chronic calcified pancreatitis in a man aged 43. There were general anemia, loss in weight and fatty diarrhea. Daily administration of crude pancreas proved ineffective. Three tablets (75 mg. of the crude or 3 mg. of the pure substance) of vagotonine, the pancreatic hormone isolated by Santenaise, were given daily by mouth; later 300 mg. of crude vagotonine or 9 mg. of pure vagotonine was given. Improvement in the general condition and a pronounced decrease in the enlargement of the liver resulted from continued treatment for six weeks. This observation supports the results obtained by Santenaise with vagotonine in depancreatized dogs. The livers of the sacrificed animals which had been given insulin and vagotonine were normal, while the livers of the animals treated with insulin alone presented a considerable excess of fat. The general condition of the depancreatized dogs treated with insulin and vagotonine was excellent in contrast to the poor condition of those treated with insulin alone. Vagotonine appears to have a lipotropic effect analogous to that of the lipoic substance extracted from the pancreas by Dragstedt.

Temporal Arteritis.—Justin-Besançon and his co-workers report 1 case of temporal arteritis in a woman aged 70. The disease is rare in France. The patient presented a temporal and a general syndrome. There were definite signs of inflammation of the two temporal arteries. They were increased in size and there was swelling and redness of the skin overlying the arteries. There was considerable tenderness on palpation; it revealed hypertrophy of the two temporal trunks, which were hard, pulseless and thrombosed. Some segments of the occipital arteries and of the left facial artery presented an identical picture. All the other branches of the arterial tree appeared normal. The patient suffered severe headaches, particularly in the temporal, occipital and nuchal regions. The patient was pale and her face had an anxious expression because of the intense pain. Temperature varied from 100.4 F. (38 C.) to 101.4 F. (38.5 C.). A left temporal arteriectomy was performed. Microscopic examination revealed a subacute arteritis obliterans, with a focus of fibrinoid necrosis and macrophagic giant cell granuloma. Pain was alleviated considerably. The fever did not subside in spite of the arteriectomy. Penicillin proved ineffective. Sixty-four grams of sulfadiazine was administered within eight days; the temperature was restored to normal; pain and swelling disappeared almost completely, but the absence of pulsation persisted. A follow-up of seven weeks is too short to decide whether a definite recovery or a remission occurred. Temporal arteritis is a clinical, anatomic and pathologic entity. Despite its diffuse character, the term temporal arteritis should be retained to emphasize the major symptom and facilitate the diagnosis.

Book Notices

Clinical Methods of Neuro-Ophthalmologic Examination. By Alfred Kestenbaum, M.D., Assistant Clinical Professor of Ophthalmology, New York University, New York. Fabrikoid. Price, \$6.75. Pp. 384, with 64 illustrations. Grune & Stratton, 381 Fourth Ave., New York 16, 1946.

In his introduction the author states that the book is intended for a review of clinical methods of ophthalmologic examinations helpful in neurologic diagnosis. He makes no attempt to make it a complete textbook of neurology and omits such diseases as heredodegenerative disorders of the retina and cerebromacular degenerations because they do not present ophthalmologic signs or tests used for neurologic diagnosis, though both the eyes and the nervous system are involved. There are ten chapters presenting, in order, anatomy of the optic pathway, fields of vision, pathology of the optic nerve, chiasmal lesions, retrochiasmal lesions of the optic pathway, eye muscle palsies, gaze movement and gaze palsy, nystagmus, disturbance of symmetrical eye movements, pupil accommodation, palpebral fissure and functional disturbances. There are no photographs or plates, only schematic drawings, which are pertinent and clear. The author describes the methods of examination and discusses the results in various pathologic conditions. He presents field charts to illustrate the types of defect in various locations of the lesions and in parallel columns mentions the defect and the probable underlying pathologic condition. He presents a method of recording the site of retinal lesions which is useful. There are several differential diagnoses presented in parallel columns for quick review. Several of his own tests and innovations are presented, as for example the capillary number test, i. e., counting the number of very small blood vessels on the edge of the disk in optic atrophy. He claims that normally about ten are visible. In optic atrophy they are reduced below six—even as few as three. The book is based on lectures to neurologists and ophthalmologists and is presented in lecture form. It is a most practical presentation of the subject and is well worth careful study by all students of ophthalmology and practitioners.

Man—Weather—Sun. By William F. Petersen, M.D. Fabrikoid. Price, \$10. Pp. 462, with 294 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

It is in no sense a pleasure to review this book—a sizeable volume which might wisely have remained unpublished in these days of an already too voluminous medical literature. The format of the book follows the publisher's usual style and quality of physical production; its content, however, evinces such severe faults in technical approach and logical deduction as to exclude it from the field of scientific literature. The relationships of man-weather-sun deserve far more intelligent treatment than they here receive!

Petersen sees "Man as a Cosmic Resonator," responding in numerous physical and chemical ways to the passage of polar and tropical "fronts." He follows three young men—triplets—intensively for forty-two days and finds their ups and downs occurring with or just after the passage of "fronts." Indeed, how could it be otherwise, when he labels thirteen "cold fronts" as passing over Chicago in the forty-two day period of observation? Everything happening in Chicago most of the time must perforce take place with or just after the passage of a "front!" Close inspection of the numerous "biometeorograms"—from which Petersen draws such positive conclusions—fails to reveal any consistent and significant visual relationship; to apply statistical methods as corroboration of relationships not otherwise evident is only to add absurdity to the situation. Statistical methods are useful only in quantitating the significance of relationships observable by other means.

Just a few instances of the illogical reasoning which abounds throughout the book: 1. There were thirteen "cold fronts" and six "warm fronts" listed as passing over Chicago during the forty-two day triplet study—one "cold front" about every three days—and still Petersen naively states (page 30) that the thirteen pulse crests of Harold all "followed periods of cold!" Each of them must also have preceded a period of cold! 2. Graphs are presented (in eight different sections) to show a different pattern of temperature and barometric pressure behavior for the four days before and the four days after

periods of pulse or other crests, overlooking entirely the fact that there can be no such patterns when most such four day periods overlap the passage of at least two cold fronts irregularly spaced. 3. Figure 118, page 135, shows in clear form the sharp monthly or menstrual cycle in basal metabolic rate of a female subject for a nine month period, but Petersen quite dogmatically relates these premenstrual rises and sharp menstrual declines in metabolic rate to coincidental or preceding changes in outdoor temperatures!

But why go on? Indexes of functional activity in the body either rise or fall as environmental temperatures fluctuate with passing "fronts"; hence Petersen sees a causal relationship! A single attack of acute appendicitis rates a whole chapter in the book; day to day passage of weather "fronts" is said to affect the day to day sex ratio of infants being conceived, when the only method of approximating the day of conception was to go back two hundred and eighty days from the time of birth—probably not over 20 per cent of all conceptions would fall within one Chicago weather cycle of this two hundred and eighty day period!

The volume is not scientific, but neither is it good nonscientific literature. Faulty punctuation, loose and top-heavy sentence structure, little regard for proper paragraphing, tiresome repetition, and over-use of italics constitute but a few of its faults. Of all Petersen's writings, it does most clearly (?) present his philosophy regarding "Man as a Cosmic Resonator," but perhaps most tragic and significant is the final word of his closing chapter—set in broken type—Chaos.

Sex Education: A Guide for Parents, Teachers and Youth Leaders. By Cyril Bibby, M.A., M.Sc., F.L.S. Cloth. Price, \$2.50. Pp. 311. Emerson Books, Inc., 251 West 19th St., New York 11, 1946.

This is a British book from a British point of view, but it differs little from American productions on the subject except that it is much more lengthy and contains a great deal of argumentation in favor of what is generally taken for granted in the United States; namely, the necessity for teaching about sex, the desirability of doing so in the home, and the advisability for having the school take over responsibilities which belong to the home but are not accepted or properly discharged in the home. The book is well written and comprehensive and should be a useful reference book and may even be used as a textbook at the college or perhaps twelfth grade level. There is a special preface for the American edition. The work proper consists of an introductory chapter which poses the problems, followed by chapters on the social setting, the parent's part, the school curriculum, sex problems in the school, the nature of adolescents, the search of the adolescent for knowledge, and a chapter on educating the educators. Almost as prominent as the chapters are the appendixes, of which there are six, dealing with a tentative scheme for sex education, suggestions for practical activities, sources of material and advice, specimen circulars, specimen lectures and a guide to further reading. This may be regarded as one of the better productions in the greatly overwritten field of sex education.

Operative Gynecology. By Harry Sturgeon Crossen, M.D., and Robert James Crossen, M.D., Assistant Professor of Clinical Gynecology and Obstetrics, Washington University School of Medicine, St. Louis. Sixth edition. Cloth. Price, \$15. Pp. 999, with 1334 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1948.

In order to avoid increasing the size of the book unduly because of new material, the authors removed considerable historical data. This does not at all detract from the book.

The title of the book is "Operative Gynecology"; yet a considerable part of it is devoted to diagnosis, etiology, histology, pathology and symptomatology. Likewise, numerous illustrations are included which have no bearing on operative technic. In fact, in the first chapter, which deals with "Myoma of the Uterus," ten full pages and a colored plate are devoted to illustrations of different types of uterine myomas.

Throughout the book whole sections of published articles by the authors and others are reprinted in small type. There appears to be too much of this. Likewise, because of the senior author's special interest in foreign bodies left in the abdomen, there are many pages of text and illustrations assigned to this subject.

There is a large and well written section on radiation therapy which is abundantly illustrated. The authors discuss radium and roentgen treatment for both benign and malignant conditions. They believe that radiation in the handling of climacteric patients with troublesome myomas is effective in stopping myoma activity and associated symptoms in 90 per cent of properly selected cases. It reduces to one third the risk of future malignancy, but it still leaves a risk of 0.89 per cent, which definite risk must be given due weight in deciding between radium treatment and operative removal in the individual patient with her special local and general conditions.

Many new illustrations have been added and a few old ones deleted. The three pages of text and the eight illustrations on the old Dudley operation could have been omitted without detracting from the book. In successive editions the authors have wisely decreased the amount of space devoted to retrodisplacements of the uterus. In the 1930 edition, 80 pages and 95 illustrations were given over to retrodisplacements, but in this edition only 35 pages and 67 figures are devoted to this subject.

The high standard of previous editions is maintained in this edition both by the authors and the publishers. The book is well written and abundantly illustrated, and it will undoubtedly continue to retain its well deserved popularity as a textbook on operative gynecology.

Health Instruction Yearbook 1946. Compiled by Oliver E. Byrd, Ed.D., Associate Professor of Hygiene, Stanford University, Stanford University, California. Foreword by C.-E. A. Winslow, Dr.P.H. Cloth. Price, \$3. Pp. 398. Stanford University Press, Stanford University, California; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1946.

This is the third volume in a series of yearbooks of which previous volumes have been reviewed in *THE JOURNAL*. Except for the anomalous dating which has previously been discussed and which puts a 1946 date on material derived largely from 1945, this is a fine job which ought to be continued. The first book was good and the second better. This is better still. In the "1946" edition appears a foreword and preface plus twenty-one chapters dealing with various phases of health, as social accomplishment; social problems; nutrition and health; excretion and health; exercise and body mechanics; fatigue and rest; mental health and disease; heredity and eugenics; infection and immunity; chronic and degenerative disorders; habit forming substances; care of special organs; safety; health and physical environment; health services and facilities; family health, school health, occupational health; community health services; trends and possibilities; international health; a bibliography; an author index, and a subject index.

The items are well selected. For example, in the chapter on infection and immunity one finds first of all a general survey of the situation, which takes two pages. Following this are items dealing in order with venereal disease in Honolulu; recent advances in control of infectious diseases; articles on penicillin; studies on infectious hepatitis; SN7618 as an effective new agent against malaria; failure of sulfonamide drugs to prevent epidemics of streptococcal disease; articles on disinfection of air by germicidal vapors and mists and on ultraviolet control of respiratory infections; vaccination against influenza; immunization against whooping cough; articles on various aspects of tuberculosis in the armed forces and among civilians; studies on streptomycin; plague in the United States; fungi in lung disease; articles on poliomyelitis; complications from scarlet fever; German measles during pregnancy; compensation for typhoid carriers; the increase of diphtheria in Michigan; postage stamps and disease; pigeons and virus pneumonia; smallpox in San Francisco; articles on the venereal diseases, and on public health uses of DDT. The reporting in each instance is brief, factual and noncontroversial.

In the introduction the authors take cognizance of the previous recommendation that the dating of the books be changed. Without wishing to be objectionably insistent, we repeat that the dates are misleading and that the change should be made as soon as possible, so that the entire series can be properly dated. The longer the present erroneous dating is carried forward, the greater will be the ultimate confusion and the more difficult its rectification.

La citología vaginal humana en condiciones normales y patológicas; Su importancia para el diagnóstico y control terapéutico en ginecología. Por Ines L. C. de Allende, Doctora en medicina, jefe de la Sección endocrinología del Instituto de Investigación médica, Córdoba, Argentina, y Oscar Orías, doctor en medicina, director del Instituto de Investigación médica. Prologo del Prof. Dr. Bernardo A. Houssay, Paper. Pp. 313, with 165 illustrations. El Ateneo, Florida 310, Buenos Aires, 1947.

This book concerns human vaginal cytology in normal and pathologic states with the exception of cancer. It stresses and describes in some detail the endocrine aspect of vaginal cytology. The author is an experienced investigator in this field, having spent several years of study in the United States and in Argentina. The book is well written and contains a large number of drawings, color plates and graphs, which have been carefully selected and prepared.

The author describes the cytologic aspects of the menstrual cycle under seven phases as follows: (1) menstrual phase; (2) postmenstrual phase; (3) preovulatory phase; (4) ovulatory phase; (5) postovulatory phase; (6) progesterone phase, and (7) premenstrual phase, with diagrams illustrating the cytologic features of each.

Disorders of menstruation are discussed from the standpoint of the cytologic findings, frequently correlated with clinical and operative findings. Cornification curves are illustrated in graphic form, showing the rise in cornification associated with increasing production of the follicular hormone. Graphs are presented in cases of normal ovulatory cycles and in anovulatory cycles. In some cases of the latter, confirmatory surgical findings of persisting follicles coupled with an absence of ovulation and a continuous abnormally high cornification level are presented. Bleeding was shown to follow a drop in cornification, indicative of estrogen withdrawal.

Primary and secondary amenorrhea are discussed cytologically with the presentation of pictures of cells and graphs demonstrating cytologic deviations from normal.

Experimental results demonstrating effects on the amenorrheic curve with chorionic gonadotropin are presented.

Experimental production of cornification in vaginal smears in human castrates is shown following the administration of estrogen in its various forms, while the effect of the androgenic hormones and progesterone are also included.

This book should prove of value to endocrinologists, to those interested in fertility, to clinical cytologists and to pathologists. It demonstrates the value of well integrated cytologic studies in relation to the endocrine physiology of the ovary and of the menstrual cycle with their associated disorders.

Handbook of the Connecticut Cancer Society, Inc. (Branch of the American Cancer Society, Inc.). Fabrikoid. No pagination, with illustrations. Connecticut Cancer Society, Inc., 95 North Main St., Waterbury 14, 1946.

This is a handbook bound in a heavy paper cover simulating red leather and stamped in gold. The first item in the handbook is a brightly colored map of Connecticut by counties, showing those counties organized for field army and campaign purposes, those for campaign only and those unorganized. The state appears to be well covered by local anticancer groups. The publication is apparently derived in part from the American Cancer Society, of which a brief description is given followed by a chronological résumé of the state program and the state organization chart. After this pages are devoted to the personnel of the state society. There is a description of the committee on tumor study and of the Association of Connecticut tumor clinics, followed by information on the Division of Cancer Research of the State Department of Health. Then follows organizational material, such as how to organize a district, how to conduct an educational program, including the programs for youth and in industry; how to handle publicity, and how to carry out a service program in cooperation with the medical profession. A description is given of the information centers, and there are discussions of fund raising and financial reporting. There follows a page on what the layman should know about cancer, plus information on national research projects and official statistics. In the appendix is a list of printed material available from the American Cancer Society and the articles of association and the by-laws of the Connecticut Cancer Society. This is an excellent working kit for a working organization and might well

serve as a pattern for similar types in other states. In the absence of any price, it is to be presumed that sample copies may be procured free by making inquiry on official letterheads to the Connecticut Cancer Society at the address given.

Help Them Help Themselves. By Juliette McIntosh Gratke. Cloth. Price, \$2.50. Pp. 184, with illustrations. Texas Society for Crippled Children, 3703 Worth St., Dallas 1, Texas, 1947.

This book deals with the problems of the management of the child with cerebral palsy, in the fields of education, physical therapy, occupational therapy, speech therapy and general hygiene. In addition to a short review of the literature relating to some of the medical aspects of the problem of cerebral palsy, the book attempts to give some of the specific technics which may be employed in the training of the child. The most authoritative section of the therapies deals with speech training, in which the author is especially qualified. The book is of definite value to mothers who are attempting to train their children at home without benefit of medical direction, but may also be of value to some of the lay workers, nurses and therapists working with these children. The subject matter is illustrated by pictures, which, unfortunately, have suffered in clarity in reproduction. In all other manners, however, the book is well written and organized. Its cover is attractive, and its printing and paper are of good quality.

Although this book is by no means complete or, for that matter, authoritative, it is of great value for parents. It is written by the parent of a child with cerebral palsy, whose feelings have colored all of her writing. As a result, the book is warmly and clearly written and has a charm and style which makes it easy, interesting and valuable reading. For this reason alone, it is well worth recommending to parents.

Rheumatism and Soft Tissue Injuries. By James Cyriax, M.D., B.Ch., Physician-in-Charge of the Physiotherapy Department, St. Thomas's Hospital, London. Cloth. Price, \$9.50. Pp. 410, with 208 illustrations. Paul B. Hoeber, Inc., 49 E. 33rd St., New York 16, [1947].

There is no doubt about the qualifications of the author and his enthusiasm for his subject. His writings on this and related subjects are well known. His main thesis is mobilization as a therapeutic measure. He contrasts his theories with the theory of the bone setter who believes in subluxation of the vertebrae as the cause of practically all the ills that human flesh is heir to.

It is unfortunate that in the author's cases of subacromial bursitis roentgen treatment failed; this is not the experience of most American surgeons. It is unfortunate that so many of the photographs are not instructive or worthy of the space they occupy.

If the author rides his hobby a bit too often and attempts to explain too many conditions on the same theory, he may be excused because he has undoubtedly given so much personal attention to his patients that he has obtained good results where others have not.

His discussion of the manipulations of bone setters, osteopaths and chiropractors is well worth reading.

There is much material that is not related to the title of the book. The author includes much of the material that enters his daily practice.

Goethe als Patient. Von Dr. Wolfgang H. Veil, Direktor der Medizinischen Universitätsklinik Jena. Second edition. Paper. Pp. 303. Gustav Fischer, Jena 15, 1946.

Shortly before World War II Dr. Veil published an interesting medical study of Goethe and a second edition of this work, containing additional material is now available. The life history of Goethe has of course been painstakingly documented in the literature that has accumulated during the past hundred years, and Dr. Veil has made careful use of the source material in ferreting out the medical and psychologic items of significance. He starts his study with an analysis of the symptoms evident during the terminal episodes, which were apparently due to coronary thrombosis. He then carries through a readable account of the varied medical as well as psychologic episodes that occurred during the lifetime of his subject. The book will be of interest to the student interested in medical history, for it depicts the medical theory and practice of a time with which few medical men are familiar.

Textbook of General Surgery. By Warren H. Cole, M.D., F.A.C.S., Professor and Head of the Department of Surgery, University of Illinois College of Medicine, Chicago, and Robert E. Elman, M.D., F.A.C.S., Professor of Clinical Surgery, Washington University School of Medicine, St. Louis. Fifth edition. Cloth. Price, \$11. Pp. 1160, with 558 illustrations. D. Appleton-Century Co., Inc., 35 W. 32nd St., New York 1, 1948.

Now in its fifth edition, this teaching volume continues to improve. The general plan of the text remains unchanged. The advances made in surgery are specifically reflected. These include the lessons of the war and the growing knowledge of chemotherapeutic and antibiotic agents. Functional concepts of shock are presented with a clear understanding of the surgeon's point of view. Pleasing is the emphasis on the clinical, pathologic and physiologic aspects of surgery with relegation of technic to a minor status. The uses of the surgical tools—the hollow needle, the various fluids, chemotherapeutic agents, tubes, catheters and dressings, with which the interns and externs spend so much time—are well described. This is proper business for the student. There is time for major surgical technic later. The book continues to merit recommendation for teaching of medical students.

Annual Review of Microbiology. Volume I. Charles E. Clifton, Editor; Sidney Raffel and H. Albert Barker, Associate Editors. Cloth. Price, \$6. Pp. 401. Annual Reviews, Inc., Stanford University, California, 1947.

The vast amount of literature which has arisen recently on studies of micro-organisms and the attendant inability of the worker to keep abreast of all aspects of the field prompted initiation of this new series of reviews.

This volume and its successors are intended to fulfil the same function that "Annual Review of Biochemistry" and "Annual Review of Physiology" have in their respective fields. The type of review and manner of presentation are similar to those of the companion series.

The contents of this first volume include morphology and cytology of protozoa, antigenic variation in protozoa and bacteria, life cycle of malarial parasites, variation in phytopathogenic viruses, some aspects of the problem of growth factors for protozoa, bacterial metabolism, nitrogen metabolism, industrial fermentations, quaternary ammonium compounds, antibiotics, chemotherapeutic agents, medical and epidemiologic aspects of enteric infection, the Rickettsiae and respiratory viruses.

Topics in Physical Chemistry: A Supplementary Text for Students of Medicine. By W. Mansfield Clark, Ph.D., Sc.D., DeLamar Professor of Physiological Chemistry, the School of Medicine, Johns Hopkins University, Baltimore. Cloth. Price, \$10. Pp. 738, with illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

The first sentence in this unique book is a quotation from Clerk Maxwell: "For the sake of persons of different types, scientific truth should be presented in different forms and should be regarded as equally scientific, whether it appears in the robust form and vivid colouring of a physical illustration, or in the tenuity and paleness of a symbolical expression." The choice of this sentence to head the preface is highly significant, for Professor Clark is aware not merely of the facts of physical chemistry; he is keenly aware of the medical reader. He knows what aspects of physical chemistry the medical student is generally assumed to understand thoroughly but which many students understand only superficially. Hence he includes a lucid and unexpected chapter on the standard chemical balance and another on measurements of volume. The author understands what information is important to the medical student and medical investigator. Hence he gives a much more detailed treatment of such subjects as the equilibrium of blood electrolytes, the behavior of colloids and proteins and stereoisomerism than is found in the conventional texts on physical chemistry. Finally, the author is almost obsessed with the repugnance which most medical students manifest toward calculus. Accordingly, every important equation is handled by simple algebra. The one unavoidable use of calculus (Kelvin's "compound interest law of nature") is carefully explained in the first of the five appendixes. This remarkable appendix is excellently designed to make calculus simple and entertaining even to those who have a violent prejudice against it. A sample is the quotation, in the opening paragraphs, from Charles Slichter's "Science in a Tavern:" "Physics is the clanking, noisy part of mathe-

matics; chemistry is the smelly part of mathematics; biology is the musky part of mathematics." The author's robust humor bursts forth even in the appendix on definitions. Thus, among the rigorous definitions extended to the sixth decimal place and beyond, we find such things as the following: "Poise (noun). Unit of viscosity. See Viscosity. (Also: 'Poise is the art of raising an eyebrow instead of the roof.')

More clinical chemical measurements depend on color matching than on the determination of weights or volumes. Hence it is unfortunate that the author cannot analyze the magnitudes of error inherent in the visual and photoelectric comparators (colorimeters) with the same detail as is applied to the chemical balance and the volumetric pipet. The principles of the various types of instruments are, indeed, taken up with admirable clarity. Each of the numerous commercially available instruments, however, has its own limitations and eccentricities. Until we have an instrument as well standardized as the analytical balance, an exhaustive treatment of the comparator will be impossible in a book of this size.

In contrast to the usual text of physical chemistry, this book is so constructed that each chapter is complete enough to stand by itself. The student who wishes to do so may start in the middle of the book with the chapter on the blood electrolytes and follow the author's reasoning without difficulty.

The late Dr. Edwin Kepler once said: "The advance of medical science depends ultimately on the discovery of better ways of measuring things." All who share such a view will find Professor Clark's volume invaluable.

The Psychology of Behavior Disorders: A Biosocial Interpretation. By Norman Cameron, M.D., Ph.D. Under the Editorship of Leonard Carmichael, President, Tufts College and Director Tufts Research Laboratory of Sensory Psychology and Physiology. Boston. Cloth. Price, \$5. Pp. 622, with 2 illustrations. Houghton Mifflin Co., 2 Park St., Boston 7, 1947.

In his preface to this volume the author points out that "when we turn to psychiatry, we do not enter a new and a different world. The psychiatrist is still the physician, an organism working with the patient, another organism. They share and operate within a common social environment; they communicate by means of socially determined signs and sounds. These are the materials of medical practice as well as of psychology and psychopathology." From the beginning to the end of his book, Dr. Cameron practices what he teaches. His way of writing gives the impression of working with and sharing his ideas with the reader. He has attempted to avoid technical terminology as much as possible and explains it in everyday language whenever he introduces it. Each of the chapters are documented with case material and there are footnoted references to modern works on psychiatry and psychology. This is a textbook that provides interesting and useful reading for professional workers.

The opening sentences of the author's introduction clarify the title of the book: "The neuroses and psychoses, which together we call behavior disorders, are a natural part of our everyday environment. As adults all of us have dealings with neurotic and psychotic persons, and our children are being brought up among them just as we once were." In discussing behavior disorders as a national problem, the author tells his readers that "the problem of behavior disorders belongs, not alone to those who have them and those who directly treat or care for them, but to all of us." The first several chapters of this book are devoted to a description of the development of personality from uterine life to social maturity. These chapters include the development of the numerous mechanisms of defense which the author designates as basic adaptive techniques. There are eight chapters on various forms of mental illness and a final chapter on therapy.

The author approaches his subject matter from a biosocial point of view, which is a modification of the psychiatry of Dr. Adolf Meyer, which he points out "differs radically from the contemporary psychosomatic approach to the behavior disorders by breaking completely with the trends of mind-body dualism."

In addition to the discussions on personality and its disorders, there is much useful information in this volume which is not ordinarily found in standard textbooks on psychiatry.

Lehrbuch der Geburtshilfe und Gynäkologie. Herausgegeben von E. Anderes, H. Guggelsberg und Th. Koller. Band II: Lehrbuch der Geburtshilfe. Bearbeitet von P. Dr. H. Buess, et al. Herausgegeben von Prof. Dr. Th. Koller, Direktor der Universitäts-Frauenklinik in Basel. Erster Teil; zweiter Teil. Cloth. Price, 110 Swiss francs. Pp. 613, with 342 illustrations; 614-1323, with 343-711 illustrations. S. Karger, Holbelnstrasse 22, Basel.

This two volume textbook on obstetrics is the first to come out of a German-speaking country since the war. It was written by a group of nine obstetricians from the leading clinics in Switzerland under the editorship of Prof. Dr. T. Koller, the director of the University Frauenklinik in Basle. The two books could have been combined into a single volume, for they contain only 1,300 pages.

The first volume covers the history of obstetrics, the anatomy of the reproductive organs, including the hormonal glands which control them, the physiology of the reproductive function, normal reproduction and a discussion of some of the abnormal presentations and positions. The second volume deals largely with the pathologic complications of pregnancy and labor. The final chapter contains an excellent discussion of the anomalies and the pathologic conditions of the fetus and newborn.

The teaching in this textbook conforms with the accepted practice in the large German clinics prior to the recent upheaval in that country. Some major changes have been made, but they are in the minority. Clinical data presented in the various chapters by excellent tables and graphs are from the various Swiss clinics. However, the majority of the illustrations are from such well-known texts as Bumm, v. Jaschke, L. Seitz, Martius and Sellheim. Many new illustrations have been added.

Much can be said about the therapy and management of many of the obstetric complications. The great advances in the last decade which have altered the practice of obstetrics so favorably in this country have not had wide use on the continent. Analgesia and anesthesia are discussed briefly. Blood and plasma have not had wide use in obstetrics. The antibiotic drugs have probably not been available for widespread use. These major advances will undoubtedly find welcome acceptance in the near future.

The treatment of postpartum hemorrhage has not been brought up to date. The author still uses the aorta compressor and other heroic measures which have long been replaced by more rational therapy. Too great emphasis is placed on a long list of oxytocic drugs and cardiac stimulants of unknown value, and there is too little discussion of the management of the third stage of labor.

The illustrations, printing and format are excellent. There is no bibliography, although there are some references to authors in the text.

This textbook of obstetrics is a welcome contribution at this time and will undoubtedly become the standard text in German-speaking medical schools on the continent.

Retropubic Urinary Surgery. By Terence Millin, M.A., M.Ch., F.R.C.S., Surgeon, All Saints' Hospital for Genito-Urinary Diseases, London. Cloth. Price, \$7. Pp. 208, with 163 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

The author, a urologic surgeon of considerable experience, presents an inclusive monograph on the retropubic approach to various surgical diseases of the prostate gland. In particular, he details his experience with retropubic prostatectomy for benign prostatic hypertrophy. He brings to attention another surgical approach to the prostate, which since it was first described by van Stockum in 1909 has attained little recognition. In order to stress advantages of the retropubic operation the author tends to emphasize the shortcomings of all other approaches to the prostate. His enthusiasm for the operation which he describes is such that for the year September 1945 to September 1946 he employed the retropubic operation in 87 per cent of all cases of prostatic obstruction treated surgically. While it is true that there is probably no one else with experience in this type of surgery comparable to that of the author, even the majority of urologists would not agree with this selection of operation in so large a percentage of patients. The experience of the author is based on 375 cases, the first of which was in 1945.

Surgical anatomy of the prostate, types of instruments used, operative technic and essentials of preoperative and postoperative care are discussed. In most cases the author performs retropubic prostatectomy as a one stage procedure perhaps following preliminary drainage of the bladder with an indwelling urethral catheter. The author describes 18 cases in which this operation was employed as a second stage procedure following preliminary suprapubic cystostomy.

In this experience there have been relatively few postoperative difficulties or complications associated with retropubic prostatectomy. Incontinence does not occur if care is taken to avoid avulsion of the mucosa of the membranous urethra. Although the author has had only 1 case of persistent urinary incontinence, varying degrees of temporary leakage have occurred in a few cases. In a small number of cases there is some leakage of urine suprapubically following removal of the indwelling urethral catheter, which has been left in place postoperatively for only three days in most of his recent cases.

Chapters are devoted to enlargements of the subcervical and subtrigonal lobes, the fibrous prostate and the calculeous prostate, for the treatment of all of which the author presents certain advantages of the retropubic route. While his experience with radical removal of the malignant prostate is somewhat limited, he suggests that retropubic prostatectomy has certain advantages in cases of this type.

Surgical treatment via the retropubic approach of carcinoma of the bladder, traumatic rupture of the posterior urethra, prostatic abscess and stress incontinence in women is also discussed. Although one experienced in this field of surgery undoubtedly could find many uses for this approach, it appears reasonable that considerable time must elapse before final comparative appraisal of the retropubic approach can be forthcoming.

The author deserves great credit for his development of retropubic surgery, as little had been done in this field prior to the initiation of his efforts. He has brought to attention another approach to the prostate and region of the vesical neck which undoubtedly will prove to be useful in selected cases. The urologist now has the choice of four main approaches to the prostate gland, an opportunity which is stimulating, provocative and at times confusing.

Les syndromes douloureux de la région épigastrique. Par René-A. Gutmann. Tomes I et II. Bibliothèque des grands syndromes. Directeur: H. Roger. Fourth edition. Paper. Pp. 739; 766, with 1373 illustrations. G. Dolin & Cie, 8 Place de l'Odéon, Paris, 6^e, 1947.

This is the fourth edition of Dr. Gutmann's valuable work on painful syndromes of the epigastrium. Gutmann is one of France's most distinguished internists and gastroenterologists and has been in charge of the gastroenterologic clinic at the Salpêtrière for many years. His book is well written and beautifully illustrated with reproductions of 962 roentgenograms. The first 318 pages are on ulcer and its treatment. The only criticism of this section might be that in it Dr. Gutmann is too inclined to quote from the work of others and too reluctant to tell of his own experience and opinions.

The next section is on the earliest symptoms of cancer of the stomach; there are about 200 pages in this section. Dr. Gutmann wisely emphasizes the importance of studying not the late symptoms of cancer of the stomach but the early ones.

Section VIII is on the dyspeptic syndrome. Although today we realize that dyspepsia is not a good word, it may still be used for lack of a better one. In this section Gutmann discusses all sorts of conditions, such as aerophagia, cardiovascular disease, blood diseases, hyperthyroidism and hypothyroidism, asthenias and anorexias.

Unfortunately, Section IX, on nervous disorders, is only 20 pages long. In this the author discusses the "syndrome solaire" vagotonia and sympathicotonia and digestive troubles associated with psychoses.

Section X is on gastritis and duodenitis and the problem of hemorrhage. He discusses the important problem of hematemesis without a definite cause.

Section XI is on digestive troubles due to sensitization and digestive intolerance.

Following this are sections on digestive troubles associated with avitaminoses, syphilis, tuberculosis and deformations of the stomach and diaphragm; also postoperative syndrome. This is a particularly useful chapter.

Certainly, any one who can read French comfortably and would like to get an insight into the best French concept of gastroenterology should read through these two volumes.

Gutmann's preface to this fourth edition is very moving. First he gives homage to Professor Gosset, who has died. Then Gutmann tells a little of the years during the war, during which he had to hide, sometimes in a haystack, in order to save his life from those who wished to murder him. As he says, his time was lost because it was spent for the most part in attempts just to live and to keep out of the hands of the Gestapo. His son Claude was murdered by the Gestapo; also his nephew and his cousin. His brilliant pupil, Dr. Dulcy, was tortured and murdered. His assistant, Mademoiselle Dr. Rekis, was murdered, together with dozens of other students and assistants in the Salpêtrière.

Communicable Disease Control: A Volume for the Health Officer and Public Health Nurse. By Gaylord W. Anderson, A.B., M.D., Dr. P.H., Mayo Professor and Director, School of Public Health, University of Minnesota, Minneapolis, and Margaret G. Arnstein, R.N., M.A., M.P.H., Assistant to the Chief, Division of Nursing, United States Public Health Service. Second edition. Cloth. Price, \$5. Pp. 450, with 7 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

The second edition of this popular book will be welcomed by all who are familiar with the first edition. The volume, while intended for the health officer and the public health nurse, will be found useful by the student and practitioner. Divided into two parts, it contains discussions of many topics, including control measures, administrative agencies, role of the public health nurse, care of communicable disease cases at home and detailed discussions of many infectious diseases.

Dermatology for Nurses. By G. H. Perelval, M.D., Ph.D., F.R.C.P.E., Grant Professor of Dermatology, University of Edinburgh, Edinburgh, and Elizabeth Toddle, S.R.N., Sister in Charge, Department of Dermatology, Royal Infirmary, Edinburgh. Cloth. Price, \$4.50. Pp. 116, with 73 illustrations. Williams and Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

This compact little book contains a fund of practical information for the nursing care of patients with diseases of the skin. Only a few of the more common diseases are considered, but emphasis is placed on the principles of treatment which can be applied as well to the diseases which were omitted. Bandaging, bathing, the application of salves, lotions and the like are all fully considered and illustrated with photographs. In places, the writing could have been more simple.

The Scientific Paper: How to Prepare It, How to Write It, A Handbook for Students and Research Workers in All Branches of Science. By Sam F. Trelease. Cloth. Price, \$2. Pp. 152, with 8 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

This manual has gradually evolved from a small pamphlet into a useful work for those who wish to prepare a scientific paper. Added is a section on the use of the scientific library for research purposes. The recommendations follow, as no doubt they should, the principles of the Williams & Wilkins Company. The editorial staff of the American Medical Association is a little surprised that there is no reference whatever to the book called "Medical Writing," which covers somewhat the same ground with specific reference to medical contributions.

The American College Dictionary. Edited by Clarence L. Barnhart with the Assistance of 335 Authorities and Specialists. Cloth. Price, \$5. Pp. 1432, with illustrations. Random House, Inc., 457 Madison Ave., New York 22, 1947.

This is the newest dictionary on the American scene. A great number of scholars cooperated in its development and it has already had a considerable success. In the field of medicine and related fields, such as psychology and therapeutics, a considerable number of New York physicians have been helpful. The book is more modern than any other similar book. It includes considerable information not available in other dictionaries, such as rules for punctuation, proofreader's marks and notes on footnotes and bibliography.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

MALARIA

To the Editor:—A missionary family expects to leave for Xingu Valley in Brazil this July. Malaria is endemic in this area. The family will consist of 2 adults, a 2 year old child, and a newborn infant. What are the suppressive and therapeutic doses of quinine, "atabrine" and chloroquine that I may recommend? Which of these would be more suitable for the children?
Lennard L. Weber, M.D., Philadelphia.

ANSWER:—Malaria due to *Plasmodium vivax* would be most frequently encountered in Brazil. Unfortunately, no curative agent for this type of malaria is available. Quinine, quinacrine ("atabrine"), chloroquine and chloguanide are all effective suppressive agents, however, and the choice of agent can be determined by relative toxicity and availability. Chloguanide is the least toxic agent, chloroquine next, and quinacrine and quinine the most toxic. Actually, quinine is not seriously toxic when compared on a weight basis with the other drugs, but in therapeutic doses, side reactions are frequent and unpleasant.

Neither chloguanide nor chloroquine has been used in infants or children sufficiently to establish dosage schedules which may be recommended. Chloroquine would probably be the drug of choice for infants and children because of ease of administration and relative freedom from serious toxic effects. Dosage should be adjusted to the age and weight of the child.

The following are the recommended dosage schedules for the four antimalarial drugs mentioned:

- Quinine:** Therapeutic dose, adults: 1.0 Gm. three times daily for two days followed by 0.6 Gm. three times daily for five days. Suppressive dose, adults: 0.6 Gm. daily.
- Quinacrine:** Therapeutic dose, adults: 0.2 Gm. given with 1.0 Gm. sodium bicarbonate in 200 to 300 cc. water every six hours for five doses. Following this, a dose of 0.1 Gm. three times daily for six days should be employed. Children 1 to 4 years: 0.1 Gm. three times daily for first day; then 0.1 Gm. daily for 6 days. Children 4 to 8 years: 0.2 Gm. three times daily for first day; then 0.1 Gm. twice daily for six days. Suppressive dose, adults: 0.1 Gm. daily. Children: 0.05 Gm. daily.
- Chloroquine:** Therapeutic dose, adults: 1.0 Gm. initially followed by 0.5 Gm. after six to eight hours and 0.5 Gm. on each of two consecutive days. Suppressive dose, adults: 0.5 Gm. weekly.
- Chloguanide:** Therapeutic in malaria due to *P. vivax*, adults: 0.1 Gm. three times daily for two to three weeks followed by 0.1 Gm. once or twice weekly for 6 months or longer. Therapeutic in malaria due to *Plasmodium falciparum*, adults: 0.1 Gm. three times daily for ten days. Suppressive in malaria due to *P. vivax*, adults: 0.1 Gm. Weekly. Preventive in malaria due to *P. falciparum*, adults: 0.1 Gm. twice weekly at three to four day intervals.

ALLERGY AND MYOPIA

To the Editor:—1. What are the best areas in California for patients with hay-fever and allergy? 2. What are other good places in the United States for sufferers from hay fever and allergy? 3. A 9 year old child has suffered from allergic rhinitis, sneezing, stuffy nose and throat breathing for three or four years. Within the past twenty months the child has become myopic. Is there an association between allergic rhinitis and myopia? Myopia is absent in both father and mother. Administration of diphenhydramine hydrochloride night and morning relieves symptoms of allergy but within the past year the visual acuity has slightly decreased.
M.D., New York.

ANSWER:—California is practically free from ragweed. Therefore, patients who are sensitive to ragweed will almost certainly be free of symptoms in any part of that state. The same holds true for all parts west of the Rockies, and there is little ragweed pollen in the state of Florida.

Those who are sensitive to grass pollen, on the other hand, will probably have symptoms in almost all parts of the United States. Those who are allergic to molds will have fewer symptoms in dry climates such as in Arizona and New Mexico. Those who are allergic to trees are usually specifically sensitive to certain trees and not to all. Avoidance of the special tree is usually sufficient for relief. For example, many suffer from mountain cedar pollen, which is especially found in certain parts of Texas and Arizona. Such sufferers obtain relief by moving away from these districts.

There is no known association between allergy and myopia.

UNDERWEIGHT

To the Editor:—What measures do you recommend for persons who are thin, underweight, apparently in good physical condition and who want to gain weight? Recently, I have had several such requests from my patients. After complete physical examination ruling out possible underlying medical cause, I put them on a high caloric diet (4,400 calories daily) rich in fats, a high potency vitamin combination, ten hours of bed rest, cessation of smoking and 20 mg. of thiamine hydrochloride intramuscularly twice weekly. At times, I have used the stuffing diet of Raffi and Brown. In several cases some progress (2 to 3 pounds [0.9 to 1.3 Kg.] weekly gain) was made; in others results were disappointing.
Herman Frack, M.D., Oak Park, Ill.

ANSWER:—Apparently you have already used the more obvious procedures such as (a) eliminating possible underlying medical causes, (b) feeding high caloric diets and (c) advising more rest. Possibly in those cases in which these measures proved ineffective, the patients did not really secure through their daily diet the calories aimed at. If they really ingested so many calories, these calories have to be accounted for somehow. Was any record kept of what and how much was really eaten? Personal impressions of how much has been eaten can be deceptive and erroneous. You might check this point by stating your need of the desired record for detailed study in order to find out what is wrong and thus get the record without seeming to tell the patient that he is mistaken about how much he eats. The consumption of diets with too large a percentage of fat should be discouraged.

There are psychological aspects of the matter worth considering. Are there any energy-rich foods that the patient greatly enjoys eating? The diet could be planned around these foods and others that are familiar to the patient. These foods should be presented in attractive, palatable form. Endeavor to make the eating of meals an enjoyable social function, instead of a time-consuming necessity of life. Teach the patient to forget his business and personal problems while he is consuming his meals. It is, of course, questionable just how much you can do, particularly with older persons, to change their attitude toward life by counsel and measures of this sort.

HYPOGLYCEMIA IN AUTO DRIVERS

To the Editor:—What is the best treatment for hypoglycemia (70 mg. of sugar per hundred cubic centimeters of blood). The patient is a truck driver, aged 45 (driving eighteen years). He states that at times the highway becomes blurred and he is afraid of "passing out."

V. M. McCartney, M.D., Monroe, Mich.

ANSWER:—1. Is the patient diabetic or epileptic or has he some other disease such as hyperinsulinism?

2. In the presence of blurred vision or premonitory symptoms of fainting, a diabetic or nondiabetic person has no business to drive an automobile until the cause is found and vision corrected.

3. Meals containing sufficient carbohydrate should be taken by both nondiabetic and diabetic persons at regular hours and no long periods without food should be allowed.

4. No diabetic person who takes insulin should drive an automobile without taking about 10 Gm. of carbohydrate every two hours between meals. Perhaps the safest plan would be to take 5 Gm. hourly on the hour. This may appear to be a small amount of carbohydrate, but the total quantity of carbohydrate burned by a diabetic or a normal person while relatively muscularly inactive is probably not more than 10 to 15 Gm. an hour.

5. No diabetic person should drive a truck unless he or she is under medical supervision every three months with a determination of visual acuity yearly. A good many diabetic persons drive automobiles thousands of miles a year, and one of the justifications for this is that in general their conduct of life is above the average of that of the general automobile licensee and that they realize their responsibility to the public, other diabetic persons, themselves and their own families.

6. Whereas it is wrong for any one to drive an automobile after drinking, it would be a heinous sin for a diabetic person to touch any kind of alcohol and then drive a car.

pH OF DIAPERS

To the Editor:—What is the optimal pH of diapers, and the range not irritating to babies?
M.D., New York.

ANSWER:—The baby diaper laundries have found that the optimal pH for the diapers is 5.5. This is slightly under the neutral of 7. The pH of 5.5 would insure that alkalinity has been counteracted or neutralized. Any variation of the pH between 5 and 6 is not thought to be the cause of skin irritation, and this slight variation is not significant.

TRANSFUSION IN ASTHMA

To the Editor:—What efficiency has blood transfusion in the treatment of bronchial asthma?
J. W. Hayden, M.D., Chicago.

ANSWER.—Blood transfusions have been used in the treatment of bronchial asthma from time to time. They probably have no specific effect in themselves, but they do contribute to increase of strength and resistance in cases of severe disease. This has been emphasized by Rackemann. It is especially valuable in the type of asthma which Rackemann has characterized as the "depletion" type. Persons with this type of asthma usually are of older age with low morale and poor resistance; they are apt to have associated complications such as chronic bronchitis, bronchiectasis and pneumonitis.

Cooke and his co-workers have shown experimentally that transfusion may relieve hay fever. That is, patients who have had good results from injections of ragweed extract have something in their blood which may favorably influence an untreated patient with hay fever due to ragweed. It should also be pointed out that there is some danger from blood transfusion aside from those dangers which not infrequently occur from this procedure. If blood from an allergic donor is injected into a nonallergic person, the recipient may become allergic to the particular allergen for a brief period of time, usually not more than a month. This was shown by Ramirez, Doerr and Duke. In Ramirez' case, a patient with pernicious anemia received a blood transfusion from a "horse-asthmatic" donor. A few days later, the recipient, while riding behind a horse, had an attack of asthma for the first time in his life. Duke noted a reaction after transfusion with the blood of a patient who had taken milk a short time previously.

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Cooke, R. A.; Loveless, M., and Stull, A.: Studies on Immunity in a Type of Human Allergy (Hay Fever): Serologic Response of Non-sensitive Individuals to Pollen Injections, *J. Exper. Med.* **66**: 689, 1937.
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Doerr, R.: Die Anaphylaxieforschung, *Ergebn. d. Hyg. Bakt. Immunitätsforsch. u. exper. Therap.* **5**: 71, 1922.
Duke, W. W.: cited by Vaughan, W. T.: Practice of Allergy, St. Louis, C. V. Mosby Co., 1939, p. 193.

CHRONIC ULCERS

To the Editor:—Is vitamin E taken orally of value in hastening the healing of chronic ulcers? A patient, a woman 82 years of age, has diabetic gangrene in both legs below the knees. She is now sugar free and the gangrene is controlled, but she has a large ulcer on each leg about 6 inches (15.2 cm.) above the instep that I have been unable to heal. Have you any suggestions?
M.D., Missouri.

ANSWER.—Vitamin E (alpha tocopherol) has been advocated by Shute and his co-workers for vascular thrombosis, but their evidence is meager and their results have not been duplicated anywhere else. The diabetic arteriosclerosis of the 82 year old woman will in all probability prevent the healing of the ulcers or the spontaneous elimination of gangrene and, if amputation cannot be considered, relief of pain and aseptic protective dressings are the only reasonable therapeutic measures.

DENTURES

To the Editor:—Is the use of such preparations as "fas teeth" and Wilson's "Corega" to keep dentures in place harmful in any way? What is their composition? Would they have any deleterious effect on leukoplakia in the mouth?
M.D., New York.

ANSWER.—The composition of Wilson's "Corega denture adhesive powder" is as follows: Each 100 Gm. is said to contain stercula gum 98.186 Gm., magnesium carbonate U.S.P. 0.274 Gm., methyl salicylate peppermint oil, menthol 0.068 Gm., and gum resin 1.472 Gm.

That of "fas teeth denture adhesive powder" is somewhat similar. Each 100 Gm. is said to contain 88.825 Gm. of stercula gum, 11.025 Gm. of sodium borate and 0.15 Gm. of peppermint oil. Nothing contained in these two or similar powders can be said to have a deleterious effect on leukoplakia of the mouth. The gel-like mass resulting when these substances combine with human saliva or other fluids and are retained for hours or days without a thorough cleansing of the dentures may, like the accumulations of food debris, aggravate oral tissues of low tone. This may be caused by a more rapid growth or increase of certain types of bacteria present in the mouth. Little or no research has been done either to prove or to disprove such a hypothesis. Well fitting dentures with

properly balanced occlusions of the teeth do not require the use of such preparations. Ill fitting dentures should either be refitted, remade or replaced.

In mouths with cleft palates or other form of serious malformation of the residual bony ridges, the moderate use of an adhesive powder may prove to be the only means of keeping the denture in place. Whenever these preparations are employed the patient should be informed that diligent hygienic care of the denture is absolutely essential.

DERMOGRAPHISM

To the Editor:—Is there any new treatment for dermographism?

Robert S. Srigley, M.D., Hollis, Okla.

ANSWER.—There are several varieties of dermographism, namely, red, white and black; it is assumed that the inquirer refers to red dermographism, which is the common variety.

The antihistaminic drugs are apparently of value in relieving this condition. Feinberg and Friedlaender (*J. Allergy* **16**:296 [Nov.] 1945) found that 50 mg. of diphenhydramine hydrochloride taken five hours, three hours and one hour before cutaneous tests were to be made would do away with whealing predicated on an inherent dermographic tendency of the patient but would not interfere with whealing due to an antigen-antibody mechanism. Baer and Sulzberger (*J. Invest. Dermat.* **7**:201 [Aug.] 1946) found that a subject exhibiting dermographism to a standard stimulus was relieved by the taking of 150 mg. of triphenylamine hydrochloride fifty minutes prior to the stimulus, but that this same amount had no influence on a fully formed dermographic wheal elicited by the same stimulus.

SULFONAMIDE COMPOUNDS

To the Editor:—What is the prevailing opinion regarding use of sodium bicarbonate in conjunction with sulfonamide compounds?

John R. Howitt, M.D., Hamilton, Ontario, Canada.

ANSWER.—The use of sodium bicarbonate in conjunction with the sulfonamide compounds is recommended so that the solubility of the sulfonamide drugs in the urine may be increased. The fluid intake in all patients who are taking sulfonamide drugs should be sufficient so that urinary output is at least 1,500 to 1,800 cc. during the twenty-four hour period. When the urinary output is adequate and the reaction of the urine is alkaline, the risk of renal complication from the sulfonamide drugs is greatly reduced.

PARALYSIS AGITANS

To the Editor:—What is the best treatment for Parkinson's disease? What can be added to belladonna to overcome dryness of the mouth? Is vitamin K of value? Is neostigmine ("prostigmin") of value?

Harry Hallarman, M.D., New York.

ANSWER.—The best form of treatment for Parkinson's disease (paralysis agitans) is use of one of the belladonna-like drugs, of which there are several. Scopolamine hydrobromide seems to be the most satisfactory in the largest number of cases. Drugs satisfactory for overcoming dryness of the mouth are not known. Dosage should be limited to the point where this manifestation of the drug is tolerable. Neither vitamin K nor neostigmine is of any known value in the treatment of this condition.

NO CANCER IMMUNITY FROM CARBON TETRACHLORIDE

To the Editor:—Do workers in a plant handling tetrachloride have immunity from cancer? Is there any known basis for such a statement?

M.D., Illinois.

ANSWER.—There is no basis for the statement that workers in a plant handling carbon tetrachloride have shown an immunity to cancer.

BASAL CELL CARCINOMAS

To the Editor:—In the issue of January 17, page 216, the answer to Dr. D. K. Adler's question on basal cell carcinomas stated that "no evidence is available to the effect that the incidence of cancer (excepting cancer of the skin) is greater in patients who have had basal cell carcinoma than in the general population." I wish to state that in persons who have had cancer of the skin, regardless of the histologic type (a) the frequency of cancer other than skin is much smaller and (b) the life expectancy is higher than in the general population. Statistical evidence is given in my papers (*Am. J. Hyg.* **34**:1-11, 1941, *Am. J. Med. Sc.* **199**:449-458, 1940). Rejection for standard insurance because of past history of basal cell carcinoma is not justified.

Sigismund Peller, M.D., New York City.

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ESTIMATION OF PELVIC CAPACITY

Chairman's Address

WILLIAM F. MENGERT, M.D.
Dallas, Texas

There are five components of cephalopelvic disproportion: (1) size and shape of the bony pelvis, (2) size of the fetal head, (3) force exerted by the uterus, (4) moldability of the head and (5) presentation and position. Of these, only the first is susceptible to accurate measurement. Attempts to measure the size of the unborn fetal head have not met with much success. Moreover, such distortion can occur during the birth process that, even if accurate prelabor cephalometry were possible, the problem of cephalopelvic relations could not be reduced to mathematic exactitude. In addition, there remain the three imponderables, force of labor, moldability of the fetal head and method of presentation, about which there is no possibility of acquisition of knowledge before the event of labor. In passing, it may be noted that as our group studies the progress of labor among women with contracted pelves, we are more and more impressed that the force of labor is one of the most important factors, if not the most important, influencing outcome. There were times, and patients with unbelievably small pelves, demonstrating again and again the principle that successful vaginal birth depends largely on the driving force. Therefore, the problem of cephalopelvic disproportion must remain in the realm of the art of medicine rather than of its science. Although this conclusion is inescapable, we should not therefore assume a defeatist attitude.

Modern knowledge concerning the obstetric capacity of the bony pelvis may be said to have originated in 1861 with Litzmann,¹ since he was the first to offer acceptable numerical criteria of size. It must be emphasized that his work, and that of his predecessor, Michaelis, was concentrated on the pelvic inlet. It remained for Williams² in 1909 to provide numerical criteria for the outlet. Acceptable midplane criteria are not yet available, largely because it was an unknown territory and also because of relative inaccessibility to other than radiographic measurement. Nevertheless, the subject of midplane capacity has its pioneer. In 1930, Hanson³ of Stockton, Calif., devised an

instrument for the manual measurement of the distance between the ischial spines and by 1936 reported a series of measurements in 3,941 women.⁴ Despite this, and more recent publications, there are many who accord little significance to midplane contraction. Fascinating as the subject is, it is not the purpose of the present paper to concentrate attention on it. Rather, it is the purpose to consider evaluation of the obstetric capacity of the entire bony pelvis.

SUBJECTS

More than three years ago, the collection of information on cephalopelvic disproportion was begun at Parkland Hospital. At first, the pelves of selected patients, later those of all obstetric patients seen for the first time, were measured radiographically. Many difficulties, including the film shortage, intervened, so that to date our series numbers only 935 patients, of whom 592 have been delivered. The pelvis of each patient was measured manually and radiographically by obstetric-gynecologic residents, employing Snow's technic. The Department of Radiology of Parkland Hospital cooperated generously in making and processing the radiographs. The three planes were portrayed graphically⁵ and a prediction of the outcome of labor made. Since early intervention could afford no useful information, patients were allowed to progress to second stage pains with the membranes ruptured. A few were delivered electively by the abdominal route, because of previous cesarean section or because the pelvis was so decidedly contracted that a trial of labor was absurd. The results, including infant birth weight and the outcome of labor, were tabulated on punch cards for ready analysis.

METHODS

When it is desired to transport a large piece of furniture through a small hallway, the obvious preliminary is measurement of the height and width of the narrowest doorways. In like fashion, measurement of the anteroposterior and transverse diameters of a sufficient number of cross sections of the bony pelvic canal will provide knowledge of its capacities. Since the bony pelvic canal is not long, the symphysis being about 4.5 and the sacrum 10 cm. from tip to promontory, three cross sections, inlet, midplane and outlet, will suffice for estimation of capacity. Figures 1, 2 and 3 show outlines of these planes of a normal gynecoid pelvis obtained, as described in a previous publication,⁵ by shaping lead wire to the anatomic contours and correcting for minor variations. Except for

From the Departments of Obstetrics and Gynecology, Parkland Hospital and the Southwestern Medical College.
Read before the Section on Obstetrics and Gynecology at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 24, 1948.

1. Litzmann, C. C. T.: *Ueber den Einfluss der einzelnen Formen des eugen Beckens auf die Geburt*, Berlin, G. Reimer, 1861.

2. Williams, J. W.: *Frequency, Etiology and Practical Significance of Contractions of the Pelvic Outlet*, Surg., Gynec. & Obst. 8: 619-638 (June) 1909.

3. Hanson, S.: *A New Pelvimeter for the Measurement of the Bispinous Diameter*, Am. J. Obst. & Gynec. 19: 124-126 (Jan.) 1930.

4. Hanson, S.: *Transversely Contracted Midpelvis with Particular Reference to Forceps Delivery*, Am. J. Obst. & Gynec. 32: 385-398 (Sept.) 1936.

5. Mengert, W. F., and Eller, W. C.: *Graphic Portrayal of Relative Pelvic Size*, Am. J. Obst. & Gynec. 52: 1032-1040 (Dec.) 1946.

the outlet, the important diameters of each plane are the transverse and the anteroposterior. Since the outlet consists of two triangles with a common base and since the fetal head emerges through the posterior triangle, the posterior sagittal rather than the anteroposterior diameter of the outlet is employed. Six pelvic

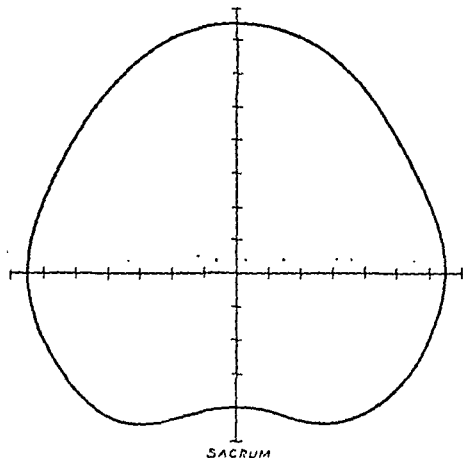


Fig. 1.—Normal inlet. (Reproduced from Mengert, W. F., and Eller, W. C.: Graphic Portrayal of Relative Pelvic Size, *Am. J. Obst. & Gynec.* 52: 1032-1040 [Dec.] 1946.) The anteroposterior measurement is 11.5, the transverse 13.0 and posterior sagittal 4.0.

measurements, the transverse and the anteroposterior of each plane, will therefore provide all practical information necessary for evaluation of pelvic capacity.

Obviously, this necessitates use of radiographic methods, since it is otherwise impossible to measure the transverse diameter of the inlet of the living woman. It is not intended to inaugurate, or encourage existing, discussion regarding the relative merits of manual or radiographic measurements. Manual measurements are accurate for those diameters possible to reach. Also, any of the commonly and currently employed radiographic technics is accurate beyond our needs. Weinberg and Scadron⁶ measured the pelves of each of 100 patients within 0.1 cm. by four radiographic methods. The radiographic method currently employed

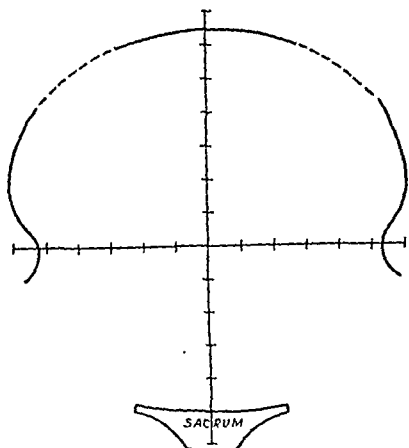


Fig. 2.—Normal midplane. (Reproduced from Mengert, W. F., and Eller, W. C.: Graphic Portrayal of Relative Pelvic Size, *Am. J. Obst. & Gynec.* 52: 1032-1040 [Dec.] 1946.) The anteroposterior measurement is 11.5, the transverse 10.5 and the posterior sagittal 5.0.

at Parkland Hospital was validated in two ways: by direct measurement with calipers and ruler during the

course of gynecologic operations and through check of the same patient by different observers. No error of more than 5 mm. was found. This is believed to represent a degree of accuracy exceeding the requirements of the situation.

In summary, it may be reiterated that method of measurement is unimportant. The interpretation and evaluation of pelvic capacity, after the measurements are obtained by whatever method, are the problems confronting the obstetrician. They can be solved only in conjunction with the experience gained through years in the delivery room. The opinion of a man who has not repeatedly followed the course of labor and does not know the extent of the forces concerned is valueless and worse; it is confusing.

INTERPRETATION

Many methods of evaluation of pelvic capacity were tried. At first, they consisted of fitting an outline cross section of the fetal head to the graphs of the various pelvic planes. Next, the sum of the posterior sagittal and transverse diameters was utilized as an index both for the outlet and midplane, with fair success. Nevertheless, some glaring discrepancies were observed. For example, a patient with the lower portion of the sacrum decidedly bent forward, and therefore with a very short posterior sagittal of the midplane, experienced an easy spontaneous labor. Review of the situation showed ample room anterior to the ischial spines. Moreover, this method was totally unsatisfactory for the inlet. The next logical step in the attempt to evaluate capacity was the utilization of the sum of the transverse and the entire anteroposterior diameter of the inlet or midplane. This gave more consistent results than other methods and led directly to the final and best method, calculation of the area of these two planes. At

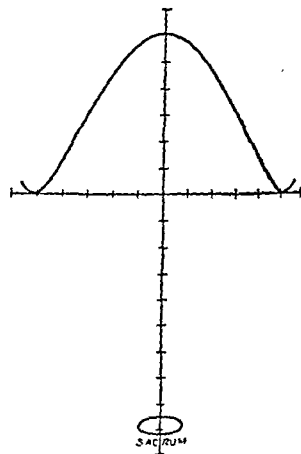


Fig. 3.—Normal outlet. (Reproduced from Mengert, W. F., and Eller, W. C.: Graphic Portrayal of Relative Pelvic Size, *Am. J. Obst. & Gynec.* 52: 1032-1040 [Dec.] 1946.) The transverse measurement is 10.0 and the posterior sagittal 8.5.

first, areas were measured with a planimeter, carefully tracing the outlines and accurately recording the precise value in square centimeters. However, the actual figures are immaterial, since the relation of one pelvis to another, or of one plane to another, is the important consideration. Finally, the simple expedient of multiplying the transverse and the anteroposterior diameters and expressing the capacity of the various planes in terms of the product of these diameters was employed. Comparison of the two methods indicated no significant difference between them. The product of the two diameters of each plane is as satisfactory a measure of relative capacity as the more laboriously obtained measurement of the actual area. A norm can be established for each plane and its capacity expressed in percentage of normal. Thus, it is possible to compare not only one pelvis with another, but also two planes of the same patient. For example, a patient with an inlet capacity of 75 per cent of normal

6. Weinberg, A., and Scadron, S. J.: Value and Limitations of Pelvioradiography in Management of Dystocia, with Special Reference to Midpelvic Capacity, *Am. J. Obst. & Gynec.* 52: 255-263 (Aug.) 1946.

and a midplane capacity of 90 per cent is far better off obstetrically than a patient with the reverse conditions.

RESULTS

Average and Distribution of Measurements.—The essential pelvic measurements (table) include the transverse and the anteroposterior of the inlet and midplane and the transverse and posterior sagittal of the outlet. The transverse is accorded priority, since engagement generally occurs in this diameter of the inlet and internal rotation is hindered by a narrow midplane.

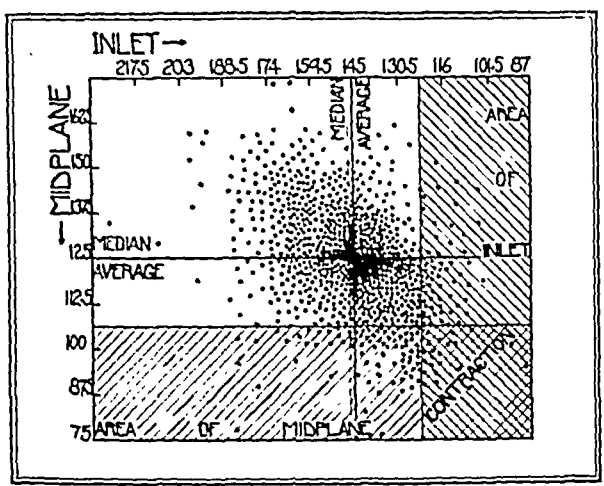


Fig. 4.—Distribution of 935 inlet and midplane capacities, expressed as areas (square centimeters). Roughly, the arrangement is linear from large to small. In other words, the inlet and midplane tend to vary together. Association of a large inlet with a small midplane, or the reverse, tends to be uncommon. The shaded area represents patients whose inlet or midplane capacities were 85 per cent, or less, of normal.

Moreover, with an adequate transverse diameter in any plane, there is seldom dystocia at that level.

The average values of the diameters as measured in 935 patients conform closely to accepted standards published by Stander.⁷ After the inlet and midplane

Essential Pelvic Measurements

	Accepted Standards	Average 935	Product, Ap. x Trans.
Inlet			
Transverse.....	13.0	12.5	145.0
Anteroposterior.....	11.5	11.6	
Midplane			
Transverse.....	10.5	10.3	124.9
Anteroposterior.....	11.5	12.1	
Posterior sagittal.....	5.0	4.5	
Outlet			
Transverse.....	10.0	10.6	
Posterior sagittal.....	8.5	8.8	

* There are six essential pelvic measurements, including the transverse and anteroposterior of each plane. The posterior sagittal of the midplane is included merely for interest.

products were obtained, the central tendency of each was calculated. For the inlet it was: average 145, median 146 and mode 143. For the midplane it was: average 124.9, median 126 and mode 121. The average values, rather than the median or mode, were utilized and 145 accepted as normal for the inlet and 125 as normal for the midplane. These figures represent 100 per cent, for each plane, respectively, and capacity is expressed in percentage in relation to them.

The entire series is illustrated graphically as a scatter diagram in figure 4. Broadly, the arrangement is linear, from large to small, indicating that inlet and midplane tend to vary together. In other words, association of a large inlet with a small midplane, or the reverse, is relatively uncommon. There are, of course, glaring exceptions to this rule.

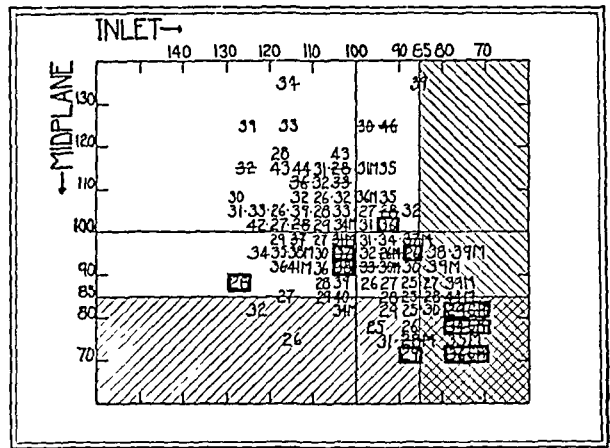


Fig. 5.—Vaginal operations of necessity in 97 cases (inlet and midplane capacities) expressed as percentage of average. The midplane forceps operations tended to concentrate in the areas of less than average capacity, and all three craniotomies were performed in women with both inlet and midplane contractions. The numbers represent weight of infants in hundreds of grams; a horizontal line through a number represents labor more than thirty hours; M is midplane forceps operation; a square enclosing a number represents fetal death, and CR is craniotomy.

By a process of trial and error, it became obvious that 85 per cent of normal capacity of either inlet or midplane represented the border line between adequacy and contraction. The area of 85 per cent or less capacity is shaded in figure 4 and subsequent figures.

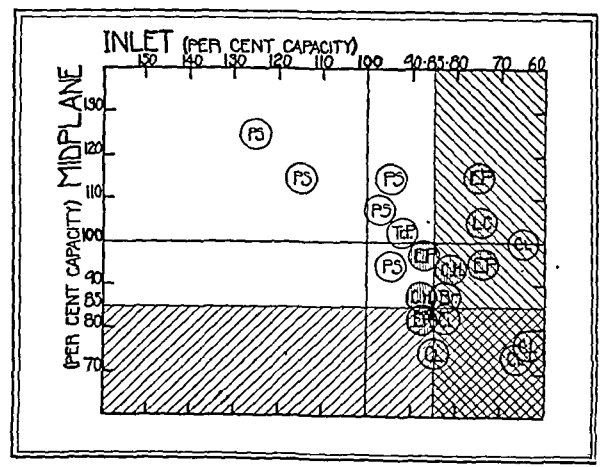


Fig. 6.—Graphic representation of data of cesarean section in 19 cases. Trial of labor, terminated by low cervical, extraperitoneal or cesarean hysterectomy, was permitted in patients with borderline pelvis. In most instances the trial was allowed to progress to second stage labor with the membranes ruptured. Elective abdominal delivery (without antecedent labor) was performed either in those women with indications other than cephalopelvic disproportion or in those with such frank contraction that a trial of labor was absurd. Plain circles represent cesarean section before onset of labor; PS is previous section, EP extraperitoneal section, CL classic section, LC low cervical section, EP extraperitoneal section and CH cesarean hysterectomy.

So far, little has been said concerning the outlet. It is doubtful whether outlet contraction exists as a sepa-

7. Stander, H. J.: Textbook of Obstetrics, New York, D. Appleton-Century Company Inc., 1945.

rate entity, unassociated with midplane contraction. This was evidenced in the present series by the fact that the intertuberosity diameter between the ischial bones was shorter than the interspinous in only two instances, and then the difference was negligible. In other words, the transverse diameter of the midplane is

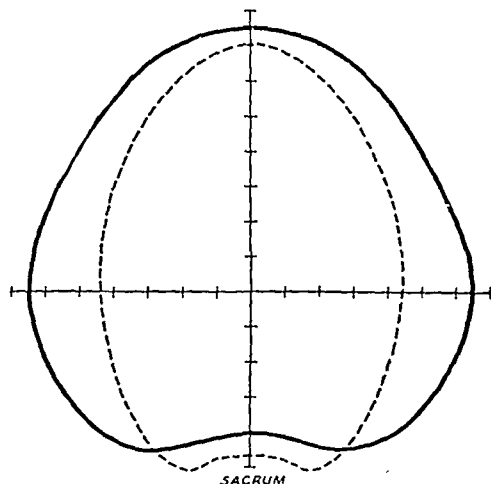


Fig. 7.—Pelvis of M.P. (reproduced from Mengert, W. M., and Eller, W. C.: Graphic Portrayal of Relative Pelvic Size, *Am. J. Obst. & Gynec.* 52:1032-1040 [Dec.] 1946.) Although the inlet would appear to be barely adequate, its capacity is only 69 per cent of average.

commonly shorter than the transverse diameter of the outlet. There is no congenital anomaly or acquired disease which will narrow the tuberosities of the ischium without also narrowing the lower part of the innominate bones. In other words, there can be no serious outlet contraction without commensurate contraction of the midplane. Finally, much of what, in the past, we have termed outlet contraction actually is midplane contraction. When the vertex of the fetal

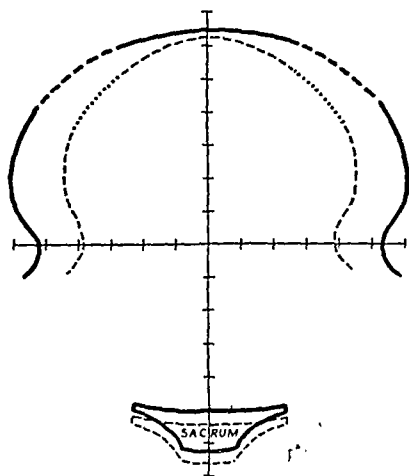


Fig. 8.—Midplane of patient of figure 7. (Reproduced from *Am. J. Obst. & Gynec.* 52:1032-1040 [Dec.] 1946.) Capacity is 72 per cent of average.

head has traversed a contracted midplane and is visible between the parted labia, the biparietal diameter is at least 7 cm. higher in the birth canal. This has been repeatedly demonstrated during the past few months by checking the progress of obstructed labors with lateral roentgenograms. They showed clearly that obstruction, when the vertex was on the perineum, was not at the ischial tuberosities, but at the level of the midplane, or above. This will be the subject of a forth-

coming presentation by one of the members of the department.

Operations of Necessity.—Figure 5 shows the distribution and outcome of vaginal operations of necessity among the 592 delivered women. There were seventy-three low forceps operations, twenty-one midplane forceps operations and three craniotomies. Low forceps operations of necessity were defined, for the purposes of this paper, as those performed after a two hour second stage arrest of labor. There was no time limit for midplane forceps operations. The majority of the low forceps operations occurred in patients anesthetized by means of caudal or spinal block. The midplane forceps operations tended to be concentrated in the areas of pelvic contraction, and all three craniotomies took place in women with combined inlet and midplane contractions.

Cesarean Sections.—Nineteen cesarean sections were performed among the 592 delivered women, an incidence of 3.2 per cent, or 1 in 31. This relatively high incidence of abdominal delivery was occasioned by the fact that the pelvis of most of the patients submitted to cesarean section were measured radiographically, automatically including them in the present series. In contrast, the incidence of cesarean section for the entire service during the same period of time was 0.55 per cent, or 1:181, representing twenty-three sections among 4,183 patients. Figure 6 shows the distribution of the nineteen cesarean sections among the subjects of this paper. These were performed on

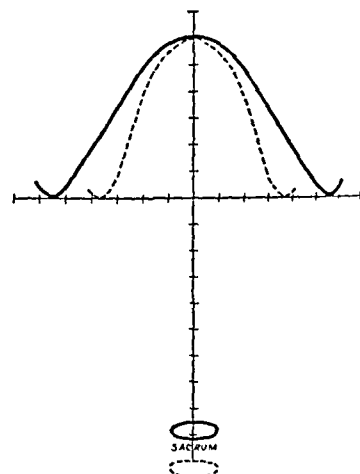


Fig. 9.—Outlet of patient of figure 7 (reproduced from Mengert, W. F., and Eller, W. C.: Graphic Portrayal of Relative Pelvic Size, *Am. J. Obst. & Gynec.* 52:1032-1040 [Dec.] 1946).

18 women, two sections being done on the patient with the smallest pelvis in the series. It will be noted that elective abdominal delivery, without antecedent labor, was performed either in those women with indications other than cephalopelvic disproportion, or in those with obviously severe contraction. Moreover, since the trials of labor were continued into the second stage, and thus were not gestures, either extraperitoneal section or cesarean hysterectomy became the operation of choice on conclusion of the trial.

The pelvis of the patient M. J., with the most pronounced contraction in the series, has been portrayed graphically elsewhere.⁵ It is worth reproducing (figs. 7, 8 and 9) here for several reasons. Morphologically the pelvis is anthropoid in type and illustrates the principle that transverse narrowing is serious. For example, although the inlet would appear to permit passage of an average head, it had but 69 per cent of capacity. The midplane appeared to be less fit to permit passage of the fetal head, but its capacity actually was 72 per cent of average. This patient submitted to elective cesarean section in two successive pregnancies. This case is in contrast with that of H. L. J.

(figs. 10 and 11). The inlet appears to be small, but had 82.5 per cent of average capacity. There was only 75 per cent of average midplane capacity, but sufficient room anterior to the spines to permit passage of the head in a transverse position. The first stage of labor lasted 23 hours, the second one hour, and a living child weighing 2,912 Gm. was born spontaneously. These 2 patients illustrate quite well the comparison of pelvis and planes when capacity is expressed in terms of per cent of average.

Mortality.—There was no maternal death in the series. There were 26 fetal deaths, of which 12 were due to causes including anomaly, prematurity, syphilis and accidents of pregnancy. There were 14 fetal deaths related to cephalopelvic disproportion or which were unexplained (fig. 12). Causes included tentorial tear and scalp injury with hemorrhage and craniotomy. There was a tendency for fetal deaths to be concentrated in, and toward, the areas of less than average pelvic capacity.

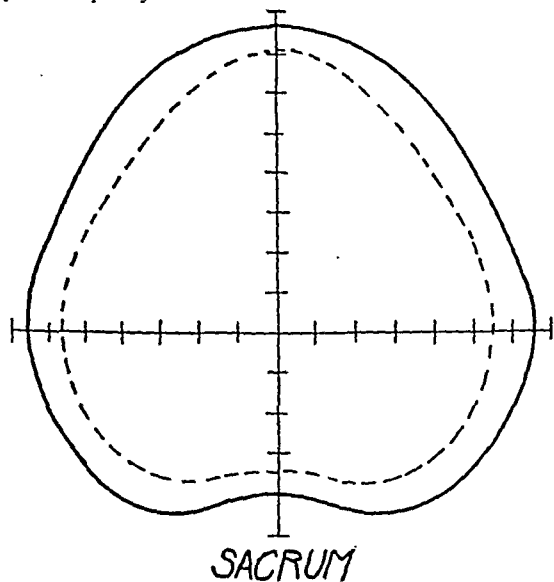


Fig. 10.—Although this inlet looks small, its capacity is 82.5 per cent of average.

COMMENT

Radiographic pelvic measurement is not feasible for all pregnant women. Moreover, it is unnecessary when manual methods indicate an obviously adequate pelvis. Therefore, an attempt was made in a previous publication⁸ to enumerate criteria of suspicion indicating the necessity for employment of radiographic methods. They should be employed in the presence of any one of the following observations:

- A. History
 1. Difficult labor, especially midforceps delivery
 2. Unexplained stillbirth
- B. Palpation
 1. Prominent ischial spines
 2. Sacral deformity (any, but especially forward angulation)
- C. Manual mensuration
 1. Inlet
 - (a) Ability to touch sacral promontory on vaginal examination.
 - (b) External measurements below average; i. e., interspinous 23 cm. or less, intercrystal 26 cm. or less and external conjugate 17 cm. or less
 2. Outlet
 - (a) Bisischial 8.5 cm. or less
 - (b) Sum of bisischial and posterior sagittal 15.0 cm. or less
- D. Nonengagement of fetal head at term in a primigravida

8. Eller, W. C., and Mengert, W. F.: Recognition of Midpelvic Contraction, *Am. J. Obst. & Gynec.* 53: 252-258 (Feb.) 1947.

There are some who will insist that harm, as a direct result of failure to perform cesarean section, must inevitably accrue to some women. There can be no disagreement with this view. There were two vesicovaginal fistulas resulting, respectively, from craniotomy and a serious midplane forceps operation. Less

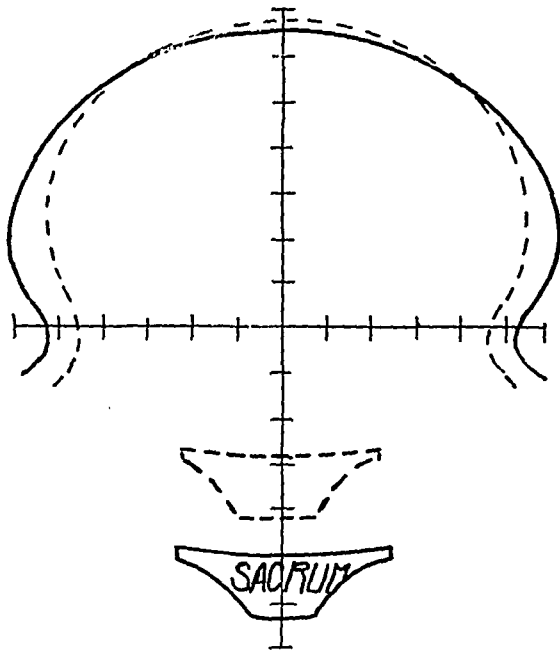


Fig. 11.—Midplane of patient of figure 10. Although the capacity is 73 per cent of average, there is sufficient room anterior to the spines. After twenty-four hours of labor, the patient was delivered spontaneously of a 2,912 Gm. living child.

obvious, but commoner, was puerperal pelvic cellulitis or, as observed clinically, prolonged morbidity. When the pelvic cellular tissues are compressed and squeezed between the fetal head and the maternal bones, and thus rendered partially or totally ischemic for pro-

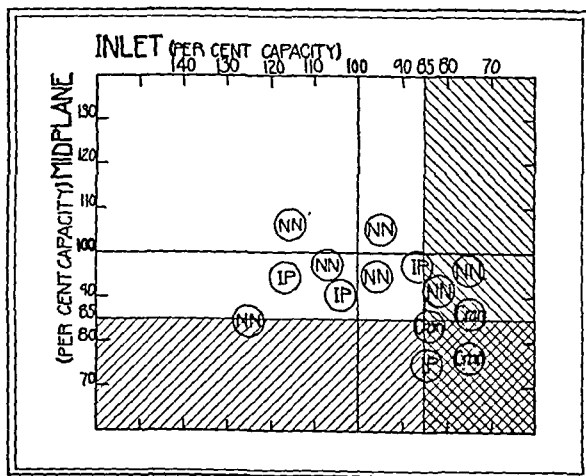


Fig. 12.—Fourteen fetal deaths related to disproportion or which were unexplained. All fetal deaths in term-sized infants, known to be alive at the onset of labor, whose mothers were free of diseases such as syphilis and eclampsia, are included here. Note the tendency to concentrate in and toward the areas of less than average pelvic capacity. (NN is neonatal; IP is intrapartum; Cr is craniotomy.)

tracted periods of time, they may be readily victimized by invading bacteria. Following difficult labor, there is generally endometritis. Although of short duration

and disappearing spontaneously, the endometritis institutes infection in the devitalized parauterine and paravaginal cellular tissues because of lowered resistance.

On the other hand, it was amazing how many seemingly impossible cephalopelvic disproportions disappeared under the driving force of the uterus. The resulting spontaneous labor was followed by normal and speedy convalescence. Conversely, when the uterine forces were poor, pelvic contraction of minor degree sometimes offered an insurmountable obstacle to the progress of labor.

SUMMARY

Of the five components of cephalopelvic disproportion, only one, the bony pelvis, is susceptible to accurate measurement. Next to pelvic size, perhaps the most important component affecting the outcome of labor is the driving force of the uterus.

The subject of cephalopelvic disproportion was actively studied at Parkland Hospital through the mediums of radiographic measurement and graphic portrayal of pelvic planes. It was observed that the best index of either inlet or midplane capacity is the product of the transverse and the anteroposterior diameters. This necessitates radiographic measurement, since the transverse diameter of the inlet cannot otherwise be measured in the living woman. The manner of obtaining measurements is unimportant, since any acceptable method offers accuracy within a few millimeters. The problems confronting the obstetrician are, therefore, interpretation of measurements and evaluation of capacity, not the making of measurements.

After determination of the index of average inlet or midplane capacity by multiplication of the transverse and the anteroposterior diameters, a given pelvis could be compared with the average in terms of percentage.

In general, inlet and midplane tended to vary together. In other words, association of a large inlet and a small midplane, or vice versa, was relatively uncommon. There were, of course, glaring exceptions to this rule.

Through experience gained with the method, it was learned that 85 per cent of average capacity represents a reasonable borderline between adequacy and contraction.

2211 Oak Lawn Avenue (4).

Hemoglobin Values.—An anemia may be defined as a reduction in the hemoglobin of the blood below the normally accepted values. Our own conclusions at the University of Michigan, after an extensive study of many normal persons, is as follows: (1) If 100 per cent is accepted as 15.6 Gm. of hemoglobin per 100 cc. of blood, the lower limit of normal for adult males is 13.0 Gm. or 83 per cent, and for females it is 12.0 Gm. or 77 per cent; (2) ordinarily patients do not experience the usual symptoms of an anemia unless the hemoglobin falls to the vicinity of about 11 Gm. or 70 per cent, or lower; (3) the physiologic anemia of pregnancy, due entirely to dilution of the circulating blood, may lower the hemoglobin of a pregnant woman to 64 per cent under normal conditions. Hence a true anemia of pregnancy is not present unless the hemoglobin is below this figure.—Sturgis, Cyrus C., M.D., *Official Journal of the Interstate Postgraduate Medical Association—Postgraduate Medicine*, June 1948.

STUDIES OF HEMOPHILIA

I. The Control of Hemophilia by Repeated Infusions of Normal Human Plasma

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No method of therapy has hitherto been devised which has proved effective in the long-continued control of hemophilia. The purpose of this paper is to report the effects of repeated infusions of normal plasma on the delayed blood coagulation and on the hemorrhagic tendency of this disease. Our observations on patients treated over a period of ten to twenty months indicate that this therapeutic approach provides a basis for amelioration of the bleeding tendency with significant rehabilitation of such patients.

Most observers¹ have agreed that the addition of whole blood, plasma or certain plasma fractions to hemophilic blood results in the prompt reduction of the clotting time. In vivo the effect is said to last from two to six days.² This property of normal blood probably explains the effectiveness of transfusion in controlling acute hemorrhage in this disease.

Whether or not the hemorrhagic phenomena in hemophilia are referable entirely to delayed blood coagulation, it would seem desirable to maintain the clotting time of hemophilic blood at relatively normal levels. The difficulties inherent in repeated blood transfusions for this purpose over a prolonged period are obvious. The use of plasma or of plasma fractions, on the other hand, is far less difficult.

Despite some progress made in the concentration and isolation of the antihemophilic component of plasma,³ potent fractions are not yet available for general clinical use. Until such time, or until another agent is discovered which will correct the abnormal coagulation of hemophilic blood, prophylactic therapy must consist of the use of plasma.

In 1942 Johnson⁴ reported the successful management of 1 patient with hemophilia by means of lyophilic human plasma administered weekly for three months, a period which is inadequate to evaluate any therapy accurately in view of frequent remissions and exacerbations of the hemorrhagic phenomena in this disease.

From the Medical Research Laboratories, Beth Israel Hospital, and the Department of Medicine, Harvard Medical School.

- (a) Weil, P. E.: Étude du sang chez les hémophiles, *Bull. et mém. Soc. méd. d. hôp. de Paris* 23:1001, 1906. (b) Sahli, H.: Weitere Beiträge zur Lehre von der Hämophilie, *Deutsches Arch. f. klin. Med.* 99:518, 1910. (c) Fouio, A.: Die Hämophilie, *Ergebn. d. inn. Med. u. Kinderh.* 51:443, 1936. (d) Patek, A. J., Jr., and Stetson, R. P.: Hemophilia: I. The Abnormal Coagulation of the Blood and Its Relation to the Blood Platelets, *J. Clin. Investigation* 15:531, 1936. (e) Patek, A. J., Jr., and Taylor, F. H. L.: Hemophilia: II. Some Properties of a Substance Obtained from Normal Human Plasma Effective in Accelerating the Coagulation of Hemophilic Blood, *J. Clin. Investigation* 16:113, 1937. (f) Lozner, E. L., and Taylor, F. H. L.: The Coagulation Defect in Hemophilia: Studies of the Clot Promoting Activity Associated with Plasma Euglobulin in Hemophilia, *J. Clin. Investigation* 18:821, 1939. (g) Minot, G. R.; Davidson, C. S.; Lewis, J. H.; Tagnon, H. J., and Taylor, F. H. L.: The Coagulation Defect in Hemophilia: The Effect in Hemophilia of the Parenteral Administration of a Fraction of the Plasma Globulins Rich in Fibrinogen, *J. Clin. Investigation* 24:704, 1945.
2. Jones, H. W., and Tocantins, L. M.: The Treatment of Hemophilia, *J. A. M. A.* 103:1671 (Dec. 1) 1934.
3. Patek and Taylor.^{1e} Bendien, W. M., and von Creveld, S.: Investigations on Hemophilia: II., *Maandschr. v. kindergeneesk.* 6:186, 1937. Taylor, F. H. L.; Davidson, C. S.; Tagnon, H. J.; Adams, M. A.; MacDonald, A. H., and Minot, G. R.: Studies in Blood Coagulation: The Coagulation Properties of Certain Globulin Fractions of Normal Human Plasma in Vitro, *J. Clin. Investigation* 24:698, 1945.
4. Johnson, J. B.: Management of Hemophilia with Lyophilic Human Plasma Intravenously Injected, *J. A. M. A.* 118:799 (March 7) 1942.

Furthermore, Munroe and Jones⁵ described a patient whose disease, after many blood and plasma transfusions, became increasingly refractory to their effects. Refractoriness also to the antihemophilic property of certain plasma fractions has been described.⁶ Since the beneficial clot-promoting effects of blood or plasma would appear promising in the prophylactic management of hemophilia, it is of the utmost importance to determine whether such refractoriness commonly develops consequent to their frequent use over a long interval.

In view of the evanescent effect of any single plasma infusion it must be given more often than once a week in order to maintain a reduced clotting time. For this reason, our patients were given plasma three to four times weekly for ten to twenty months. Laboratory and clinical observations made during this time are here presented.

PROCEDURE

Four subjects were treated:

CASE 1.—T. K., aged 24 years, had group B, Rh-negative blood, with an original clotting time of sixty-five to ninety minutes. One of his mother's brothers died of severe bleeding, and one of his own brothers who died at the age of 6 months was thought to be a bleeder. From the age of 1½ years there were numerous hemorrhages into joints, muscles, genitourinary tract and from gums. The patient was frequently incapacitated, with innumerable hospital admissions. He was studied for years at another hospital, where weekly plasma therapy for two years was ineffective in preventing hemorrhages. He was never employed steadily because of frequent hemorrhages.

During the present study the patient received two hundred and six infusions of 150 cc. of plasma three times weekly for eighteen months. For another one and one-half months, because of a hemorrhagic episode described later, the patient received 100 to 150 cc. of plasma daily or twice daily. Thereafter he was given plasma therapy three times weekly. Throughout the observation period of twenty months there were several lapses in therapy of four days to one month when the patient left town on holidays. Total plasma injected was approximately 38 liters.

CASE 2.—I. G., aged 28, had group O, Rh-positive blood, with an original clotting time of one hundred and twenty minutes. One brother died in infancy of hemorrhage. The patient had experienced bleeding episodes since the age of 6 into joints and muscles, from mucous membrane and into the genitourinary tract. He was severely crippled and incapacitated, and had been studied and treated for years at another hospital.

He received two hundred and seventy infusions over nineteen months, totaling approximately 41 liters, as follows: 150 cc. three times weekly for nine months; four times weekly for one and one-half months; daily for one and one-half months; four times weekly for five and one-half months, and three times weekly thereafter.

There were occasional short lapses (four to five days) for experimental purposes and one (ten days) because of illness (episode of jaundice) preventing his return to laboratory for scheduled treatment.

CASE 3.—R. R., aged 17 years, had group A, Rh-positive blood, with an original clotting time of one hundred and eighty minutes. There was a negative family history. The patient had had hemorrhages since early infancy, into joints mostly, and from deciduous teeth. He was hospitalized ninety times and was considerably crippled, unable to attend school.

This patient received one hundred and seventy-three infusions of 180 cc. three times weekly for thirteen months, totaling about 31 liters. There was one four day lapse, when icy road conditions prevented the patient from coming to the hospital for scheduled treatment.

CASE 4.—C. R., aged 8 years, had group O, Rh-positive blood. The family history was positive for hemophilia. The patient had had hemorrhages since early childhood into joints and muscles, interfering seriously with school work. His physical activity was restricted. He was first seen by us because of severe hemorrhage into the gastrocnemius muscle.

He received one hundred and eleven infusions of plasma, 100 cc. three times weekly for ten months. There was one lapse of two and one-half weeks when the patient was confined to his home because of chickenpox.

The plasmas were prepared as follows: 250 cc. "pyrex" glass centrifuge bottles containing 25 cc. of 2.5 per cent sodium citrate solution were filled with blood from normal subjects,⁷ capped and centrifuged⁸ for fifteen to twenty minutes at 2,000 revolutions per minute.

The supernatant plasma was removed with a syringe and placed, in amounts of 100, 150 or 180 cc., into a dry Fenwal flask. The bottled plasma was then quickly frozen and stored in the frozen state⁹ at 10 F. Sterile technic was used throughout. Bloods with positive serologic tests for syphilis were excluded.

Some flasks contained plasma of two to three blood groups; most, however, contained plasma of only one type. No attempt was made to give plasma of homologous type, although for the first six months all donors were typed. Since no reactions could be attributed to incompatibility, typing was discontinued thereafter.

Immediately prior to administration the frozen plasma was thawed in a water bath at body temperature or less, filtered quickly through a stainless steel 150 mesh filter into another Fenwal flask, and administered intravenously in five to ten minutes with a Fenwal set.

Determinations of the coagulation time, by a modification of the Lee and White method,¹⁰ were frequently made immediately before, immediately after and twenty-four, forty-eight and seventy-two hours after administration of plasma.

Occasionally, plasma was withheld in order to permit observation on the height to which the clotting time would rise and to reevaluate quantitatively the clot promoting effect of plasma in vivo and in vitro.¹⁰

LABORATORY OBSERVATIONS

The infusion of plasma was always followed, almost immediately, by a pronounced drop in the coagulation time to normal or near normal limits.¹¹ The clotting time remained low during the first twenty-four hours, increased gradually during the subsequent day and, unless another plasma injection was given, returned to its previous level within seventy-two or more hours (figs. 1 and 2). This pattern of reaction was uniform for 3 of the subjects who were thus studied. Variations in coagulation time were seen in the same patient twenty-four, forty-eight and seventy-two hours after any single plasma infusion, and a difference was noted from patient to patient in the average clotting time twenty-four, forty-eight or seventy-two hours after administration of plasma. The difference could not be correlated with the original clotting time before plasma therapy.

7. Dr. Mark Lesses, Director of the Blood Bank, Harriet Sheffren, in charge of the Volunteer Blood Donors, and volunteer blood donors cooperated in making blood available for this purpose.

8. Since the antihemophilic principle of plasma is labile, particularly in whole blood,¹² most of the blood was processed within one-half hour after withdrawal.

9. Under such conditions, antihemophilic potency remains unaffected for at least five months.

10. Alexander, B., and Landwehr, G.: Studies on Hemophilia: II. Assay of the Anti-Hemophilic Clot Promoting Principle in Normal Human Plasma with Some Observations on the Relative Potency of Certain Plasma Fractions. *J. Clin. Invest.* 27:98, 1948.

11. The normal range for the clotting time was considered to be 4-11 minutes.

5. Munroe, F. L., and Jones, H. W.: The Detrimental Effect of Frequent Transfusions in the Treatment of a Patient with Hemophilia, *Am. J. M. Sc.* 206:710, 1943.

6. (a) Pohle, F. J., and Taylor, F. H. L.: The Coagulation Defect in Hemophilia: The Effect in Hemophilia of Intramuscular Administration of a Globulin Substance Derived from Normal Human Plasma, *J. Clin. Invest.* 16:741, 1937; (b) The Coagulation Defect in Hemophilia: Studies on Refractory Phase Following Repeated Injections of Globulin Substance Derived from Normal Human Plasma in Hemophilia, *ibid.* 17:779, 1938.

In none of the patients did the disease become refractory to the effects of normal plasma. There was, furthermore, no evidence that by maintaining the coagulation time at levels more closely approximating normal, the underlying defect in blood coagulation was

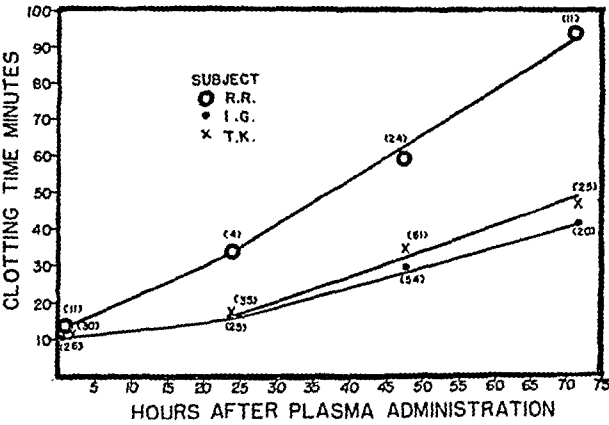


Fig. 1.—Effect of repeated infusions of normal human plasma on clotting time of hemophilic blood. The numeral in parentheses represents the number of determinations of the clotting time at the designated interval. The points on the curves represent the averages of these determinations.

any less at the end than at the beginning of the therapeutic regimen described. The over-all effect of repeated infusions of plasma is indicated diagrammatically in figure 3. Despite peaks in clotting time reached immediately before each administration of plasma, the average clotting time was greatly reduced. As little as 1 cc. of intravenously administered normal plasma hastens the coagulation of hemophilic blood. The duration of this effect varies with the dose (fig. 2; table 1). Ten cubic centimeters may lower the clotting time to relatively normal limits, but the effect lasts for a shorter interval than when 100 or 150 cc. are used.

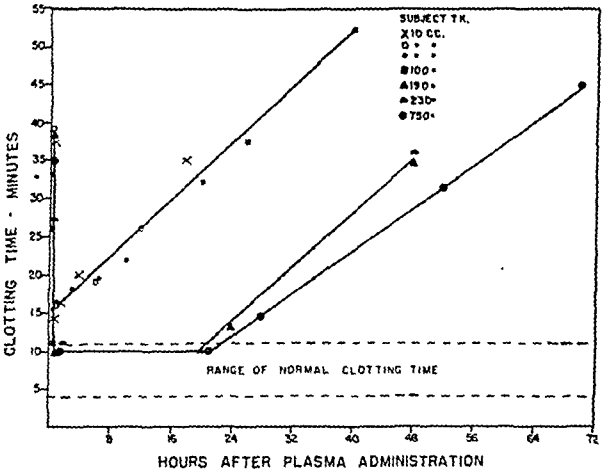


Fig. 2.—The effect of varying amounts of normal plasma administered intravenously on the coagulation time of hemophilic blood.

Larger amounts produce a more sustained action, but the prolongation of the effect is not directly proportional to the dose. The effects of 50 or 100 cc. of plasma are at times practically indistinguishable from the effects of 10 cc., and the difference between 750 and 230 cc. is slight. Intramuscularly administered plasma appears to be far less effective in hastening the coagulation of hemo-

philic blood (table 2). As much as 30 cc., 15 cc. injected into each buttock followed by five minute massage of the injection site, failed to reduce the clotting time as much as 1 cc. given intravenously. The slight effect which was obtained appeared in one-half to one hour after injection, whereas intravenous plasma acts almost immediately. It is noteworthy that plasma, even in amounts of 650 to 750 cc., does not reduce the clotting time much below the upper limit of normal. Most often it ranged, immediately after infusion, between eleven and fifteen minutes (fig. 3).

CLINICAL OBSERVATIONS

Case 1.—The clinical course of all the patients during this period of prolonged prophylactic therapy was strikingly improved. Patient 1 was free of major

TABLE 1.—Effect of Infusions of Varying Amounts of Normal Plasma on Coagulation Time of Hemophilic Blood

Subject	Amount Injected, Cc.	Clotting Time (Minutes)						
		Before Injection	Time After Injection					
			Min.	Hours				
				6	10	24	48	
RR.....	2.0	116	58	..	..	..	..	
	10.0	112	23	..	39	57	..	
	50.0	57	17	..	..	39	68	
	100.0	106	11	..	..	..	47	
	150.0	110	11	..	..	26	50	
	150.0*	90±	11	..	..	33	55	
TK.....	1.0	121	44	..	..	..	..	
	10.0	40	36	18	24	37	..	
	100.0	26	11	..	..	36	52†	
	150.0*	40	11	..	..	18	35	
	190.0	39	10	..	..	18	35	
	230.0	28	12‡	..	..	11§	35	
IG.....	750.0	35	11‡	..	..	10‡	22‡	
	.....	..	..	..	..	15**	32††	
	10.0	32	17‡	21	30	42§§	..	
	1.0	120	59	..	..	..	..	
	1.5	150	51	..	..	..	..	
	3.0	160	31	..	..	..	..	
JG.....	150.0	160	12	..	..	..	55	
	650.0	186	10	..	14‡‡	27‡‡	50	63‡‡ 140‡‡

* Average of many observations (fig. 1).
† Forty hours after injection.
‡ One and three-fourths hours after injection.
§ Twenty hours after injection.
¶ One and one-half hours after injection.
|| Twenty-one hours after injection.
Forty-four hours after injection.
** Twenty-four hours after injection.
†† Fifty-two hours after injection.
‡‡ Three-fourths hour after injection.
§§ Twenty-six hours after injection.
||| Thirteen hours after injection.
|||| Sixty-six hours after injection.
||| Eighty-seven hours after injection.

hemorrhagic episodes throughout the time that he received plasma regularly despite greatly increased activity (swimming, bowling, baseball, basketball, gymnastics, squash, running, horseback riding). In no instance was there more than localized ecchymosis even following types of trauma which had hitherto resulted in moderate to severe hemorrhage. Hemostasis in dental care involving scraping the gums was greatly simplified. For the first time, the patient was able to do sustained remunerative work for one and one-half years. This patient experienced four significant hemorrhagic episodes. The first occurred five days after a plasma infusion, when, while on a short holiday (five days) the patient fell down some steps, incurring severe trauma to arm and leg. The second hemorrhage, hematuria, developed after four days without plasma, again while the patient was traveling. This subsided within one week after plasma therapy was resumed.

A third episode, oozing from an extensive pyogenic ulceration of the buccal mucosa, which persisted despite plasma therapy, ceased dramatically after the first of several penicillin injections administered in doses of 200,000 units with each plasma infusion for one week. The ulcer cleared promptly. The fourth episode

TABLE 2.—Comparative Effect of Intravenously and Intramuscularly Administered Normal Plasma on Coagulation Time of Hemophilic Blood *

Route of Administration	Plasma Injected, Cc.	Clotting Time (Minutes)				
		Before Injection	Minutes After Injection			
			5-11	30	60	180
Intravenous.....	1.0	120	59	..	..	..
	1.5	150	51	..	..	..
	3.0	160	54	..	..	..
Intramuscular...	2.0	160	160	..	..	..
	30.0†	150	150	140	..	..
	30.0‡	160	..	140	..	..
	30.0§	144	..	..	75	83
	30.0§	144	..	..	75	83

* Each experiment was done on a different day. Normal plasma used in each experiment was demonstrated to be fully potent by simultaneous *in vitro* assay.²⁰

† Five cubic centimeters into each triceps.
‡ Fifteen cubic centimeters into each buttock.

occurred spontaneously when the subject was again on a month's holiday; incapacitating hemarthroses developed five days after the last plasma and were followed later by hematuria. Hematuria persisted for six weeks despite several whole blood transfusions and infusion of plasma daily or twice daily, each of which reduced the coagulation time to normal range. The addition of penicillin to some of the plasmas was also ineffective in instituting hemostasis.

Case 2.—The second subject had suffered extensive crippling as a result of repeated hemarthroses and hemorrhages into the gastrocnemii. This patient, likewise, has been rehabilitated. For the first time in his life he has been able to do some remunerative work in his profession (commercial artist). Despite his incapacitation, he has been able to travel 80 miles (129 kilometers) to and from the hospital for his treatments.

During the period of study this subject had four hemorrhagic episodes. Two hemorrhages, one in an elbow and one in a knee, occurred after plasma had been withheld for four days for experimental purposes; the third, an ileofemoral hemorrhage,^{1c} began during a week end about sixty hours after a plasma infusion, and required hospitalization. For these reasons, therapy was changed from three to four infusions weekly. The fourth episode occurred while the patient was without plasma for ten days when, because of jaundice, he was advised to remain at home. All except the ileofemoral episode were mild to moderate in severity and lasted about one week while plasma therapy was continued.

Because it was felt, after one year's observation, that this patient's hemorrhagic tendency could be controlled by repeated infusions of normal plasma, a bilateral open tenoplasty of the achilles tendons was performed to overcome abnormal plantar flexion consequent to old hemorrhages into the gastrocnemii. It was felt that this physical handicap interfered with the patient's gait and resulted in undue strain on the knees, thus predisposing these joints to trauma. Seven days after an uneventful operation the wounds began to ooze despite daily plasma infusions which reduced the clotting time to relatively normal levels. At this time, the patient

was slightly febrile and the wounds had partially separated. Because infection was suspected, the patient was given full doses of sulfadiazine and 300,000 units of penicillin with a daily plasma infusion for one week. Following the first dose of penicillin bleeding ceased and recovery was uneventful, the wounds healing by secondary intention. One hundred and fifty cubic centimeters of plasma was given daily for forty-two days and every other day thereafter. The operative result was good; the patient's gait is now greatly improved.

Case 3.—The third subject has also been much more active physically and socially, indulging in baseball, touch football, hunting, bowling, etc., for the first time in his life. He is experiencing his most sustained interval of uninterrupted school attendance, broken only by a severe infection of the respiratory tract requiring hospitalization and by one hemorrhage, described in the next paragraph. He, too, travels 80 miles three times weekly to receive plasma.

Despite many incidents of trauma there have been only three significant hemorrhagic episodes with no history of antecedent trauma. The first, sixty hours after a plasma infusion (over a week end) occurred into a knee and subsided within four days without requiring bed rest. The second, also into a knee, began about eighty hours after the last infusion of plasma (the patient failed to come in for his scheduled infusion of plasma because of icy road conditions). Incapacitation lasted about ten days, during which time the patient continued to receive plasma issued by us and administered daily at home by his local physician. The third hemorrhage, also into a knee, began seventy-two hours after a plasma infusion (over a week end) and subsided within three days while plasma therapy continued.

Case 4.—This subject has also been relatively free of significant hemorrhagic episodes despite greatly increased physical activity and many traumatic episodes, one occurring on a day when the patient was scheduled to receive plasma, consisting of a deep

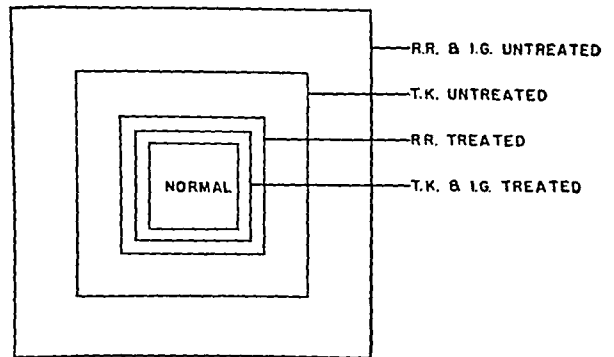


Fig. 3.—The over-all reduction in coagulation time induced by regularly administered normal plasma to persons with hemophilia. The areas enclosed by the rectangles represent the clotting time over the study period, integrated from the curves in figure 1.

long laceration of the hand requiring hospitalization. Restriction of play at home and in school have been largely eliminated.

It is practically impossible to record all the minor hemorrhages and ecchymoses which a hemophilic patient ordinarily experiences during the course of his disease. These are so many and frequent that the usual patient pays little attention to them. During the course

of plasma therapy the subjects were unanimous in their opinion that they experienced markedly fewer minor hemorrhagic phenomena despite a pronounced increase in activity. With every lapse in plasma therapy the lesser hemorrhagic phenomena reappeared.

Control of the disease, as well as the disease per se, required numerous social and psychiatric readjustments. These will be described in a separate communication.¹²

Ten reactions to plasma were observed, an incidence of 1.2 per cent. Six were minor, characterized by urticaria or momentary faintness and giddiness. One, moderately severe, occurred early in the course of the study after the administration of a specimen which was not previously filtered.¹³ Of the remaining three one was severe, associated with drop in blood pressure, dyspnea, distressing cough and severe headache, and two were moderate, producing chills, malaise, and transient fever. The incidence of reactions was no greater toward the end than at the beginning of the period of therapy.

One subject (I. G.) experienced insidiously developing jaundice associated with malaise, severe anorexia, mild epigastric distress and discomfort in the right upper quadrant. Physical examination revealed no abnormality except for jaundice and definite tenderness to palpation and percussion in the right upper quadrant and over the right lower costal border anteriorly. The icteric index was 67. After ten days at home, sixteen days after onset, the patient returned for plasma therapy, definitely improved and free of symptoms. At that time, his icteric index was 36, and three and one-half weeks later it was 14. We consider this a probable episode of mild "homologous serum jaundice."

COMMENT

Although transfusion with blood or plasma is generally accepted as being effective in the treatment of acute hemorrhage in hemophilia, no therapeutic plan has until now been devised which will control the hemorrhagic tendency over a prolonged period. On the basis of our observations we believe that frequent infusions of normal plasma are effective in the control of this disease.

There is considerable uncertainty as to whether the bleeding tendency of hemophilia is related solely to the delayed coagulation or also to some other factors such as disturbances in function of capillary and larger vessels in response to trauma. The beneficial effects of normal blood or plasma may also be referable to other factors besides their property of hastening the coagulation of hemophilic blood.

We have noted, in accord with numerous other observers, that bleeding may continue in persons with hemophilia when coagulation times are reduced and maintained only slightly above normal levels. After bleeding has proceeded for some time, reduction to relatively normal clotting time may, in some cases, fail to induce prompt hemostasis. This may be related to hemophilia per se or to local infection, as is suggested by the dramatic response to penicillin¹⁴ in cases 1

and 2. Continuation of bleeding despite reduction in clotting time should be differentiated from initiation of new hemorrhages. In the latter the effect of vasoconstriction of the injured blood vessel exerts its fundamental role in the over-all hemostatic mechanism.¹⁵ After several hours this important vascular reaction operates no longer.

Experience obtained in the use of heparin for delaying coagulation of blood in the treatment or prevention of phlebothrombosis and embolism indicates that a clotting time of between fifteen and twenty minutes is a relatively safe range within which untoward hemorrhagic phenomena are unlikely to occur,¹⁶ although exceptions are occasionally encountered. Retarding coagulation by heparin to two to three times the normal is regarded as innocuous except in cases of active bleeding or within three hours following surgery. Even immediately after infusion of plasma the coagulation time of hemophilic blood is at best in the upper limits of normal, or, more often, slightly above normal (fig. 1). Under such conditions the person with hemophilia may be compared with a heparinized person having a similar coagulation time. That the latter will exhibit persistent bleeding if heparinization takes place too soon after surgical treatment or that he may experience spontaneous hemorrhage is perhaps of significance in explaining some of the hemorrhagic phenomena seen in hemophilia despite transfusions with blood or plasma.

Of fundamental importance is the question: Is the hemophilic patient with a clotting time of ten to twenty minutes less prone to hemorrhage than one with a clotting time of thirty to one hundred and eighty minutes? The proved efficacy of blood or plasma transfusion in the therapy of acute hemorrhage in hemophilia supports an affirmative answer. The positive correlation between bleeding tendency and delayed blood coagulation induced by heparin also supports this view.

On the basis of experience with heparin it would seem desirable to maintain the clotting time of hemophilic blood at least below twenty minutes. As can be seen from figure 2 this can be done only by the administration of about 10 cc. of plasma every eight hours, 150 to 180 cc.¹⁷ every twenty-four to thirty hours, or disproportionately greater amounts every forty-eight hours. The first method is not practical; the third seems inordinately wasteful of plasma in view of the rapid disappearance of the clot-promoting effect in vivo (fig. 2¹⁸). The dosage and frequency of administration which we employed were considered the most practical under the circumstances, although it was realized that the coagulation time would, and often did, exceed twenty minutes and that hemorrhage might accordingly ensue.

The isolation of thromboplastic and other clot-promoting elements from various biologic materials has been attempted. Excepting some derived from human plasma their intravenous use may be dangerous.

12. Cohen, E., and Herrman, R.: Social Adjustment of Six Patients with Hemophilia: Prior to and During Prophylactic Treatment, to be published.

13. We have observed that, after thawing, macroscopic "fibrin" shreds appear in the plasma which are removed by filtration through a stainless steel 150 mesh filter.

14. Although clot promoting properties have been reported for penicillin the antibiotic has been found ineffective as a clot accelerator in hemophilia (Macht, D.: Thromboplastic Properties of Penicillin and Streptomycin, *Federation Proc.* 6:160, 1947).

15. MacFarlane, R. G.: Critical Review: The Mechanism of Hemostasis, *Quart. J. Med.* 10:1, 1941. Quick, A. J.: The Hemorrhagic Diseases and the Physiology of Hemostasis, Springfield, Ill., Charles C. Thomas, Publisher, 1942, p. 91.

16. Murray, D. W. G.: Some Experimental and Clinical Aspects of the Use of Heparin, *Surg., Gynec. & Obst.* 70:246, 1940; 72:340, 1941. Crafoord, C., and Jorpes, E.: Heparin as a Prophylactic Against Thrombosis, *J. A. M. A.* 116:2831 (June 28) 1941. Homans, J.: Venous Thrombosis and Pulmonary Embolism, *New England J. Med.* 236:196, 1947.

17. Less would be necessary for children, probably proportionate to the blood volume.

18. Alexander, B.: Studies on Hemophilia: III. Some Physiological and Biochemical Properties of the Antihemophilic Principle of Normal Human Plasma, to be published.

It is hoped that antihemophilic plasma fractions will replace whole plasma in the control of this disease. At present they do not show uniform potency.¹⁹

That the coagulation defect in our subjects did not become worse under plasma therapy is of the utmost importance. We found no evidence of refractoriness. This is in contrast to the result in the patient of Munroe and Jones³ whose condition is reported to have become resistant to blood or plasma transfusion and whose blood was shown to contain an anticoagulant. Whether this development can be attributed to the use of frequent transfusions, as is claimed by the authors, or whether it appeared spontaneously, as is suggested in the case of Lawrence and Johnson,¹⁰ is still uncertain.

Persistence of the coagulation defect after the therapeutic period, while throwing no definite light on the pathogenesis of hemophilia, suggests a fixed inability of the hemophilic person to elaborate the antihemophilic moiety found in normal plasma.

Our finding of relative ineffectiveness of intramuscular administration is not in accord with other reports⁶ of accelerated coagulation following injections of plasma or plasma "globulin" substance via this route. The discrepancy is perhaps related to differences in the assay methods and the amounts of materials used.

Since the effect of 50 or 100 cc. of plasma administered intravenously may not be distinguishable from that of 10, and 650 to 750 cc. may not be distinguishable from 150 to 190 cc., great caution should be exercised in comparing the antihemophilic potency of different biologic materials on the basis of their clot-promoting action *in vivo*. The ability to superimpose curves representing the degree and duration of clot acceleration *in vivo* may be an unreliable basis for drawing conclusions with regard to antihemophilic potency.

The hemorrhages experienced by our subjects, most of them occurring when the clot-promoting effects of the last administered plasma had largely disappeared, also attest to the value of continued repeated plasma therapy, since the hemorrhagic phenomena, coinciding with lapses in therapy, serve as a control for the therapeutic approach. It is probable, also, that minor hemorrhagic phenomena, such as were observed in our subjects after definite trauma and as might be expected on the basis of clotting times rising intermittently, were prevented from becoming major episodes by the frequent administrations of plasma. On the other hand, persistent bleeding, even when the clotting time is maintained between ten and twenty-two minutes and in the absence of infection, suggests that factors other than delayed coagulation of blood may be involved in the hemorrhagic phenomena of hemophilia.

The therapeutic method which we have used is admittedly laborious and cumbersome. It requires an efficient blood bank with a positive balance of blood. The sizeable dose of plasma and its relative ineffectiveness when given intramuscularly exclude nonintravenous routes of administration. The person with hemophilia becomes, furthermore, "tied" to a hospital institution. Nevertheless, we believe that the prophylactic management of hemophilia by means of plasma is not only effective but also feasible. Most hospitals have blood banks. The whole procedure can be entrusted to a blood bank nurse. Patients can be

scheduled to appear three mornings a week in the outpatient department for their treatments. After five to ten minutes of infusion, the patient is free to leave.

The supply of veins has presented no great problem in the adult patient, although our subjects were repeatedly subjected to many additional venipunctures for experimental purposes. In some of the patients, furthermore, many veins had already been destroyed by previous blood transfusions and hemorrhages.

Against the benefits derived from plasma must be weighed possible ill effects such as reactions and the transmission of infectious diseases. Obviously, this danger would still exist when and if plasma fractions became therapeutically practical.

The incidence of reactions to plasma in our group was smaller than that reported by other observers,²⁰ although it should be pointed out that in our study each member of a small group received a large number of plasmas, whereas in other studies each recipient in a large group was given one, or perhaps several, plasma infusions. It is of interest that the incidence or severity of reactions was no greater toward the end than at the beginning of the study. We obtained no evidence that passive transfer of sensitivity to allergens from donor to recipient occurs.²⁰

The absence of reactions attributable to incompatibilities between donor plasma and recipient red cells is probably due both to the small volume of each infusion and to the relative rarity of extremely high agglutinin titers.²¹

The frequent administration of plasma for the control of hemophilia raises the important question of the likelihood of "serologic" jaundice by this procedure.²² The occurrence of jaundice in 1 patient is of interest in this regard, although we cannot be sure that this was an episode of serologic jaundice. If we assume that it was, our figures²³ suggest that the incidence of infectiousness in the population at large is approximately 1 in 540 if the 3 other persons with hemophilia are considered still susceptible to the disease; of 1 in 130²⁴ if they are excluded.²⁵

SUMMARY AND CONCLUSIONS

The intravenous infusion of freshly processed, frozen, normal human plasma three to four times weekly provides a therapeutic approach to the effective control of hemophilia. On this regimen the status of 4 persons with hemophilia has been strikingly improved. The clot-promoting effect of plasma was constant over a period of twelve to twenty months. The underlying coagulation defect remained unaltered. The duration of the effect of normal plasma is related, but not proportionately, to the size of the dose. Intramuscular administration of plasma is relatively ineffective. The incidence of reaction was 1.2 per cent. No reaction could be attributed to incompatibility of blood groups. One patient contracted what was considered to be mild serum jaundice.

20. Miller, E. B., and Tisdall, L. H.: Reactions to 10,000 Pooled Liquid Human Plasma Transfusions, *J. A. M. A.* **128**: 863 (July 21) 1945.

21. Aubert, E. F.; Boorman, K. E.; Dodd, B. E., and Loutit, J. F.: Universal Donor with High Titer Isoagglutinins: Effect of Anti-A Isoagglutinins on Recipients of Group A, *Brit. M. J.* **1**: 659, 1942.

22. Grossman, C. M., and Seward, E. W.: Homologous Serum Jaundice Following the Administration of Commercial Pooled Plasma, *New England J. Med.* **234**: 181, 1946.

23. The total amount of plasma injected into the four hemophiliacs was 121 liters, which were obtained from about 540 donors.

24. Calculated on the basis of the total number of donors who provided the plasma infused into this hemophilia up to 4 months (presumptive incubation period) before the patient showed clinical jaundice.

25. Apparently susceptibility to serologic jaundice is not 100 per cent (Neefe, J. R.; Gellis, S. S., and Stokes, J., Jr.: Homologous Serum Hepatitis and Infectious [Epidemic] Hepatitis, *Am. J. Med.* **1**: 3, 1946).

19. Law
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& Climatol. A. **57**: 223, 1942.

PHEOCHROMOCYTOMAS

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Tumors of pheochrome tissue have been considered to be among the rarer tumors, but with increasing interest in all types of hypertension and with improvements in diagnostic methods, these tumors have been recognized more frequently than formerly. The syndrome of "paroxysmal hypertension" that has been considered typical of tumor of pheochrome cells is familiar to all, but with the finding of more of these tumors observers now realize that many of them produce symptoms of persistent unremitting hypertension resembling the so-called essential hypertension. It has also been shown that some tumors arising from pheochrome tissue, notably the carotid body, apparently do not cause the hypertensive symptoms.

SYMPTOMS AND MANIFESTATIONS

The usual symptom complex is either spontaneous or induced and consists of a pounding headache, a pronounced beating of the heart with epigastric distress and a constriction of the hands and feet, often associated with a sense of impending death, lasting a few minutes to several hours. It is usually followed by excessive perspiration, weakness and exhaustion and sometimes shock. Associated with the attack is a decided rise in both systolic and diastolic blood pressure and a subsequent fall to the usual normal or lower levels at the termination of the attack. In addition, blood and urine examinations at the time of the attack show sugar curves somewhat similar to those seen in diabetes mellitus. It has been recognized that the attack is due to the effect of the release of an excess of a pressor substance, epinephrine, from the increased number of pheochrome cells in the tumor. At times death may result from the excess epinephrine released.

Continuous Hypertension.—It has been pointed out by Palmer and Castleman,¹ Howard and Barker² and Quinby³ that a number of these cases do not present this typical intermittent syndrome but have a sustained continuous hypertension that when present has confused the observers so that for a long time the condition remains unrecognized. A number of times unsuspected tumors of the pheochrome tissues have been accidentally discovered during the operative procedure of sympathectomy for continuous hypertension. The recognition that such continuous hypertension may be the result of a more or less continuous release of excess epinephrine is well illustrated by the following cases.

CASE 1.—J. L., a girl aged 12, was admitted Sept. 2, 1943 with a complaint of excessive perspiration and loss of weight for two years. She was intolerant of heat and refused covers

even on cold winter nights. She complained of a fast beating heart and used only the slowest of movements because of her apprehension of her heart beating. She was excessively thin, with a moist skin, and showed a blood pressure of 210 systolic and 150 diastolic, which was lower when she was erect and higher when she was prone. Her basal metabolic rate was plus 50 to 65. From Sept. 2, 1943 to Aug. 16, 1944, she was studied in a number of admissions in which her various metabolic studies showed normal creatine-creatinine ratio and a reduced serum iodine (4.8 micrograms per hundred cubic centimeters; normal for her age, 6.2). The usual cold pressor tests showed immediate rise in blood pressure. Injection of 0.2 cc. epinephrine intravenously produced an immediate increase of her subjective complaints and increase in blood pressure. Her fundi showed a moderate degree of papilledema of disks with obliteration of disk margins bilaterally and increased congestion of the vessels. Auriculoventricular nicking was not

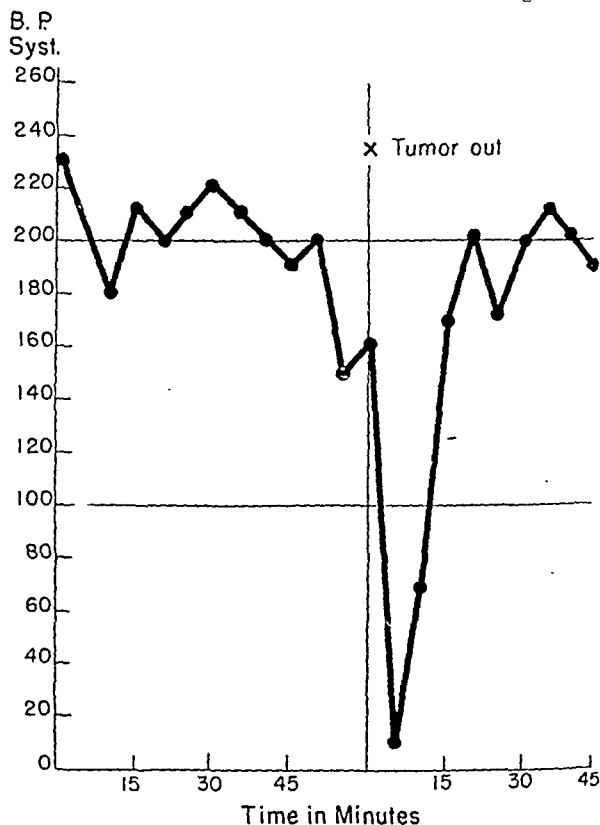


Chart 1 (case 1).—Systolic blood pressure taken at the time of first operation, showing the immediate drop in blood pressure on removal of the first tumor and the rapid rise to former levels due to the presence of the second tumor.

noted. There were at first no hemorrhages or exudate. Results of a glucose tolerance test were within normal range, and she had no elevation of blood sugar or sugar in her urine. She showed no appreciable change under therapy with strong iodine solution U. S. P. Her true condition was finally suspected, and with an air insufflation roentgenogram a small tumor of the left adrenal was visualized. This was removed through a left flank incision on Aug. 16, 1944. She had the pronounced variations of blood pressure seen in these cases at the time of operation with a severe drop on removal of the tumor, but in a few minutes the blood pressure ascended again to high levels. Another tumor was then suspected to be present, and anteriorly in the incision there was revealed a mass in front of the pancreas. Since in all preceding cases the blood fell to normal or lower than normal levels and remained there, this immediate rise in blood pressure was thought to be due only

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1. Palmer, R. S., and Castleman, B.: *New England J. Med.* **219**: 793, 1938.

2. Howard, J. E., and Barker, W. H.: *Bull. Johns Hopkins Hosp.* **61**: 371, 1937.

3. Quinby, W. C.: *Tr. Am. A. Genito-Urin. Surgeons.* **36**: 103, 1943.

to additional excess pheochrome tissue elsewhere. The adrenal tumor microscopically was a pheochromocytoma.

She made a good recovery from the first operation, but her symptoms persisted. During this convalescence it was suggested that an epinephrine antagonist (2-[1-piperidylmethyl]-1,4-benzodioxan) be used intravenously to determine whether

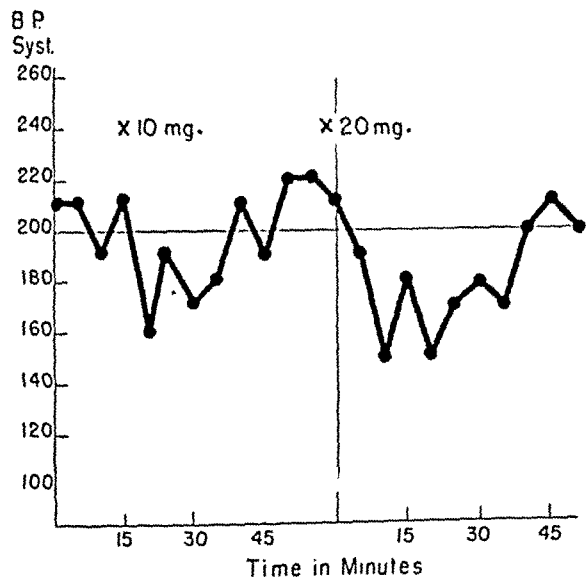


Chart 2 (case 1).—Effect of 10 mg. and 20 mg. of benzodioxane on the systolic pressure in the period before the second tumor was removed.

there was excess epinephrine in her blood. A significant fall in blood pressure was the result of the intravenous administration of the benzodioxan with a gradual rise to former levels. A number of injections were done, all with similar results. She was then again operated on and an extra-adrenal pheochromocytoma removed transperitoneally from the left preaortic area just superior to the pancreas. Immediately after the removal of the tumor her blood pressure declined to 110 systolic and 60 diastolic; it has remained around that level to date, with complete relief from all her former symptoms. She has gained weight back to normal for her age. Her metabolic changes returned to normal range and her retinal changes disappeared. The benzodioxan tests subsequent to removal of the tumor showed no alteration of the blood pressure.

This particular case was confusing because of the supposed rarity of these tumors in children and because a syndrome of continuous unremitting hypertension was presented. The presence of an intra-adrenal tumor was established by the air insufflation roentgenograms, and the failure of the blood pressure to remain low after removal of the first tumor made a second extra-adrenal tumor suspected. This was confirmed by the effect of the benzodioxan test, although, this being the first case in which the effects were registered, the value of the test had not been established.

Change to Sustained Hypertension.—The change in some of these cases from remittent to sustained hypertension is illustrated by the following cases.

CASE 2.—D. B., a girl aged 10, was admitted Feb. 20, 1946 with nervous attacks and excessive perspiration for three years. At first the attacks consisted of nervousness, shortness of breath, epigastric pain and nausea followed by profuse sweating, and they occurred about every two weeks. The attacks became more frequent, and at admission and during study she had no periods of remission. During hospital observation her blood

pressure varied from 210 systolic and 160 diastolic to 185 systolic and 130 diastolic. She showed no physical changes except overaction of the heart. She was studied for thirty days, in which she showed no sugar in her urine and normal glucose tolerance readings. Her fundi showed changes similar to those in case 1 and according to the examiner⁴ were seen in no other condition than that observed in the former case. A test with the benzodioxan similar to that done in case 1 showed a significant drop (50 mm. systolic plus) in blood pressure, which remained depressed for ten minutes. Repetition of the test produced similar results. Intravenous pyclograms showed normal nondisplaced kidneys, and air insufflation roentgenograms did not reveal an enlargement of either adrenal. A diagnosis of extra-adrenal pheochromocytoma was made. It was suspected to be in the upper part of the abdomen.

A transperitoneal operative exposure showed a retroperitoneal tumor at the bifurcation of the aorta (Zuckerkind's body) and another large tumor in the epigastric area, retroperitoneal and covered with large cirrroid, dilated veins. The anterior veins were doubly ligated and cut. When attempts were made to separate the vena cava from the large tumor, there was pronounced increase in pulse and pressure and the pulsation suddenly ceased. Attempts at resuscitation failed.

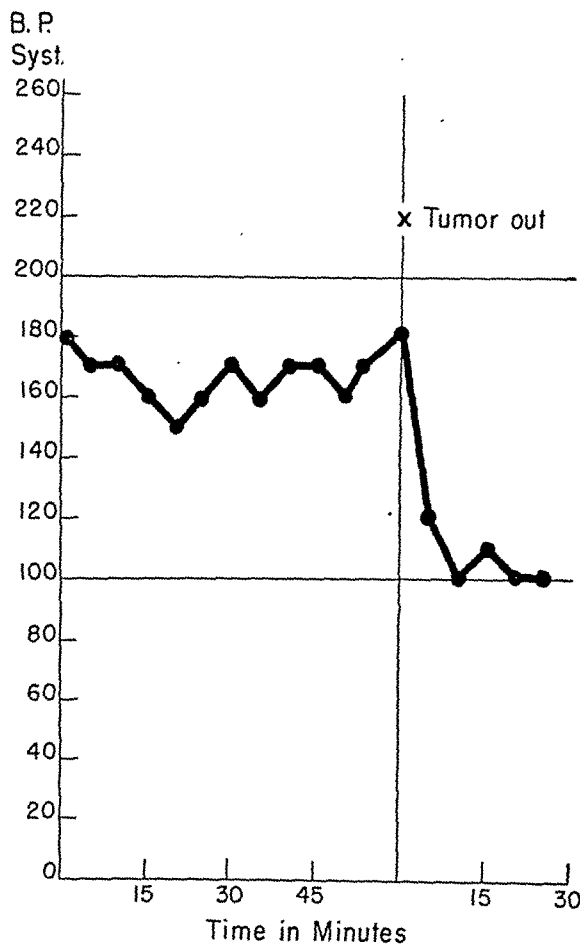


Chart 3 (case 1).—Systolic blood pressure taken during the second operation, showing the almost immediate drop to low level after removal of the second tumor. There was apparently no more excess epinephrine being secreted after removal of the tumor and the conclusion reached was that all secreting tumor tissue had been removed.

Injections of the benzodioxan given during the pronounced change in blood pressure had no effect.

An autopsy showed an extra-adrenal pheochromocytoma between the aorta and the vena cava, intimately attached to

4. Bruce, G. M.: Tr. Am. Ophth. Soc. 45:1, 1947.

both and the size of an orange. A second pheochromocytoma at the bifurcation of the aorta, about the size of a small plum, was also found. Both adrenals and kidneys were anatomically normal. The patient had hypertrophy of the heart, atheromatosis of the aorta and coronary vessels, cysts of the ovaries and mild adenomyosis of the uterus. Nephrosclerosis was not present, a fact brought out by Howard and Barker, who wrote that if it was present it was only so in a mild degree.

This child showed the vascular changes seen with continuous hypertension, except for the supposed specific changes in the fundi. The air insufflation roentgenograms showed anatomically normal adrenals, but the air did not infiltrate around the epigastric tumor because of the tight fascial planes over the tumor. Infiltration of air around an extra-adrenal tumor so that it is visualized has apparently only been rarely seen and only when the fascial spaces are not under pressure and are connected with the perirenal area. This has occurred only once in our department.

This, the second case in which a significant reduction occurred in the blood pressure with injections of the benzodioxan, gave more significance to the test, especially so since no changes occurred in patients with

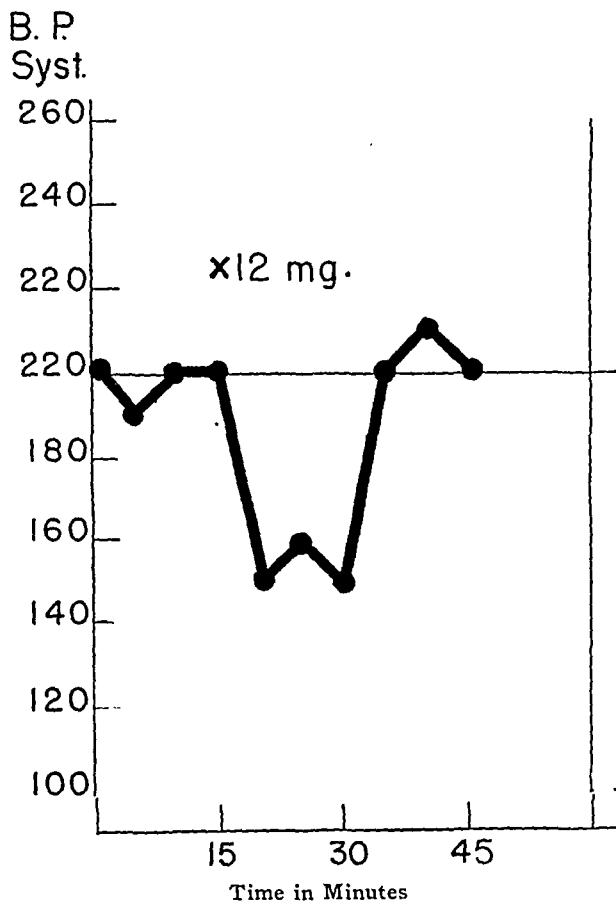


Chart 4 (case 2).—Effects of 12 mg. of benzodioxane on the systolic blood pressure.

known essential hypertension; in a number of patients suspected to have pheochromocytoma results of the tests were negative, and on operative exploration no tumors were found. The determining factor of the diagnosis was the positive reaction to the benzodioxan

test with a history of a gradual change from paroxysmal hypertension symptoms to more or less continuous hypertension.

Retinal Changes.—The peculiar retinal changes in these 2 cases (separately reported by Bruce) Bruce stated that he had not seen before and definitely not

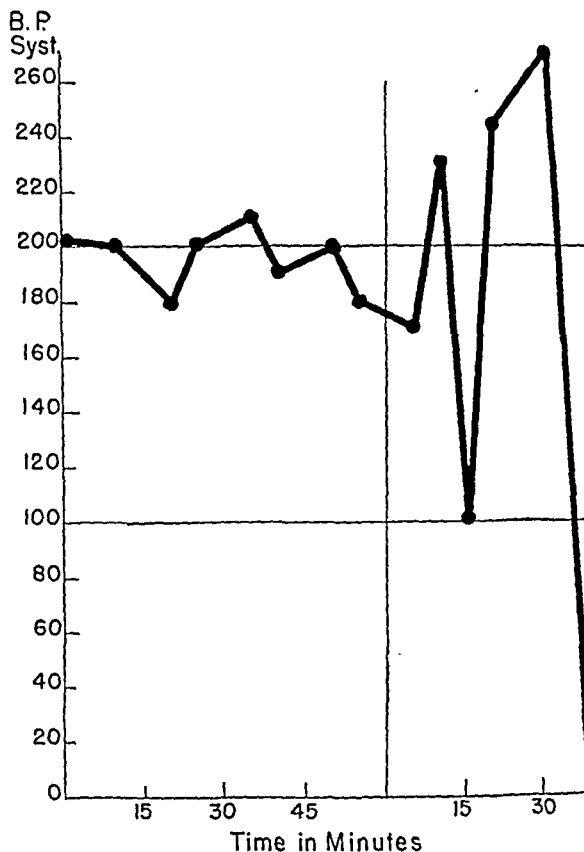


Chart 5 (case 2).—Systolic blood pressure recordings at operation, with extreme elevation on attempt to isolate and ligate the vessel to the vena cava and immediate fall to zero with the death of the patient.

in other cases of hypertension. The papilledema and disk margin blurrings with fluffy exudate and hemorrhage were next seen by him in a third case, and the patient was referred into the hospital with the diagnosis of suspected pheochromocytoma based on the eye examination alone, associated with hypertension.

CASE 3.—P. D., a boy aged 11, was admitted Oct. 4, 1946 complaining of failure of vision for one week. The objects in the room were blurred and he was unable to read. He was examined by an ophthalmologist on the day of admission; (1) hypermetropia, (2) exudate in the retina and (3) hypertension were found. He had excessive sweating and thirst associated with a pounding headache, abdominal pain and nausea and vomiting and a pounding heart beat for three years. These attacks occurred at intervals, precipitated by excitement or activity; they usually occurred every month or so, lasted a day, and were followed by diaphoresis, weakness and loss of appetite. Blood pressure readings in between the attacks were reported as normal.

He was a healthy-appearing boy, somewhat apprehensive. His blood pressure was 260 systolic and 190 diastolic. A severe pounding headache developed, with pallor, sweating, nausea and vomiting and with a pulse rate of 150 and blood pressure of 270 systolic and 210 diastolic. The attack lasted

two days with listlessness following. A test with the benzo-dioxan after the attack showed a drop of blood pressure to 138 systolic and 110 diastolic, lasting only a few minutes. His pressure slowly fell in three days to 118 systolic and 82 diastolic. Air insufflation roentgenograms showed the left adrenal and kidney normal in size and position. The right kidney was small and poorly delineated by the air, and there was no infiltration at the hilus. The left adrenal looked normal. Intravenous and retrograde pyelograms showed lessened secretion in the right kidney diagnosed as "hypoplastic." While under observation he improved clinically and his eye-ground changes regressed. At no time did he show sugar in his urine, increase in sugar in his blood or abnormal sugar tolerance reaction. By the twenty-third day his improvement was pronounced, with normal blood pressure; he was able to read and was up and about.

He was operated on Oct. 29, 1946 under tribromoethanol-nitrous-oxide-oxygen anesthesia, and a transverse incision was made. A tumor about the size of a peach mesial to the hilus of a hypoplastic right kidney was removed with the kidney. The right adrenal was normal. During the entire procedure the blood pressure remained relatively stable and exhibited no untoward rise or decline. His recovery was excellent, his blood pressure remaining around 120 systolic and 80 diastolic, and his retinal changes regressed. On the ninth day another trial of the benzo-dioxan was given (0.6 Gm.), with no significant

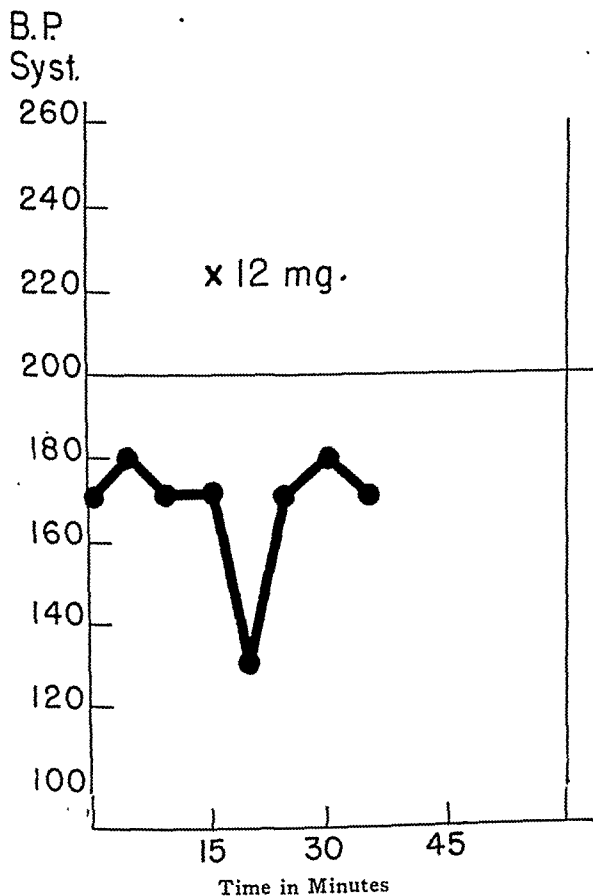


Chart 6 (case 3).—Effect of 12 mg. of benzo-dioxane on the systolic blood pressure.

rise or fall after the administration of the drug. The pathologic report was (1) pheochromocytoma of aberrant adrenal medullary tissue, (2) hypoplasia of the right kidney and (3) calcium deposits in the right kidney. The tumor showed pronounced degenerative changes throughout, due to infarction caused by thrombosis in the main artery to the tumor.

From these 3 cases, the following inferences may be drawn, if such inferences are permissible: The syndrome occurs in children more often than shown by the few cases reported. The continuous hypertension phenomena may be seen oftener in children, and

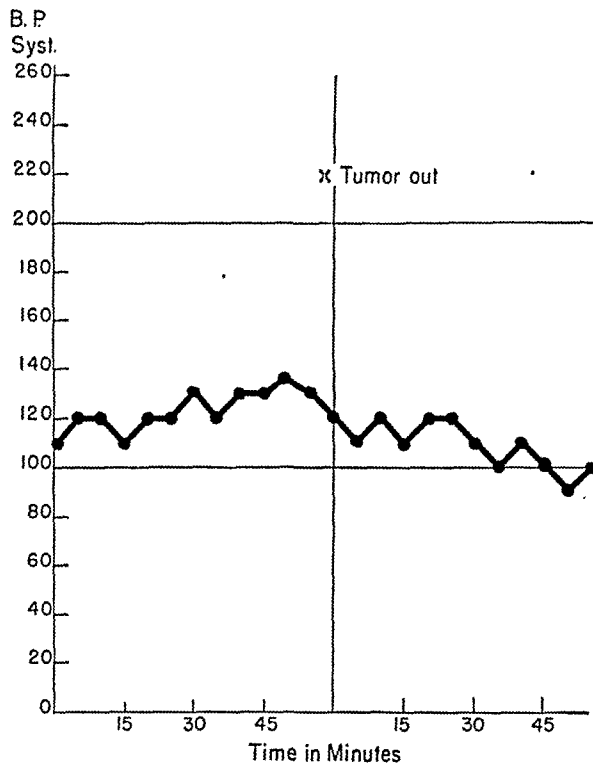


Chart 7 (case 3).—Systolic blood pressure recordings during operation. The patient had spontaneous infarction of vessels to the tumor, with amelioration of the symptoms previous to operation, and as a result there was little change during operation and following removal of the tumor.

when they occur they may be associated with characteristic retinal changes. In children changes in metabolism occur but changes in blood sugar and urine resembling diabetes are not so frequent (at least they did not occur in any of these 3). In children multiple tumors may occur; on removal of one tumor the failure of the blood pressure to stay within low records should make an additional tumor suspected. In these 3 children five tumors occurred; only one of these was intra-adrenal; the other four were extra-adrenal. A spontaneous infarction occurring in 1 patient relieved all symptoms, so that operative removal was without incident.

The usual tumor is seen more frequently in adult life, occurs more often in the female (our cases: 10 females and 4 males). They are usually benign (McKeith⁵ indicated that 9 per cent were malignant), and according to McKeith⁵ they are 9.7 per cent bilateral.

The tumors are mostly seen intra-abdominally. In 1 case the tumor was reported to be intracranial.⁶ In 3 cases tumors have been reported as intrathoracic; one tumor was successfully removed by Mayer.⁷ Multiple tumors occurred in our cases 3 times in 14. The patient whose thoracic tumor was successfully removed

5. McKeith, R.: *Brit. Heart J.* 6:1, 1944.

6. Cahill, G. F.: *Surgery* 16:233, 1944.

7. Mayer, H.: Personal communication to the author.

by Mayer still has some symptoms of excess epinephrine, but my co-workers and I were able to demonstrate normal adrenal shadows by air insufflation roentgenograms.

BASES FOR DIAGNOSIS

A diagnosis of pheochromocytoma depends on (1) a typical attack and associated clinical findings, among which may be characteristic retinal changes in children; (2) evidence in a case of so-called essential hypertension of symptomatic and clinical findings characteristic of the pheochromocytoma syndrome; (3) demonstration in the blood of a pressor substance as

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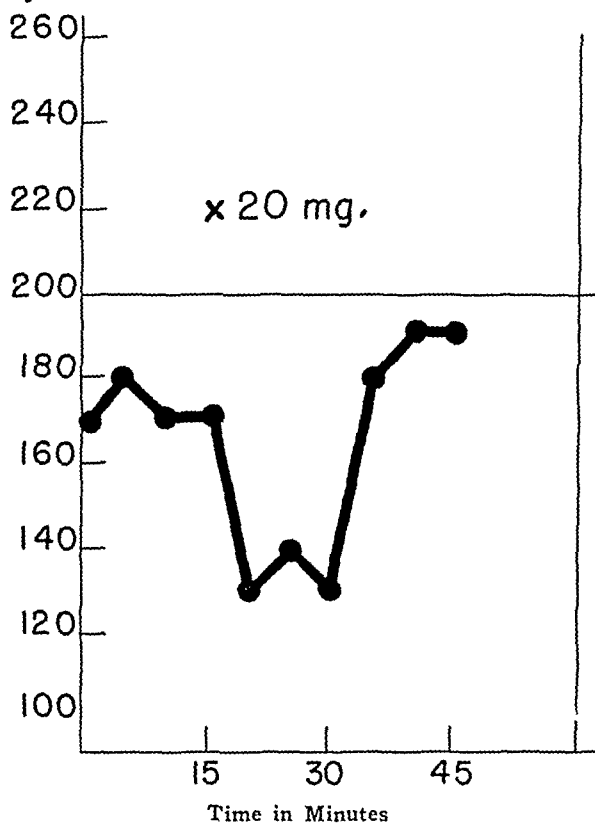


Chart 8 (case 4).—An adult with a large tumor and paroxysmal type of hypertension. Effects of 20 mg. of benzodioxane on the systolic blood pressure.

shown by Beer, King and Prinzmetal⁸ or a significant reduction in the blood pressure associated with the intravenous injection of an epinephrine antagonist as the benzodioxane series; (4) precipitation of an attack in a resting stage by an epinephrine-producing stimulus as described by Roth and Kvale⁹; (5) roentgenographic evidence of the presence of a tumor, either without or with perirenal air insufflation or by renal displacement with pyelographic mediums.

The use of the various steps in the diagnosis are illustrated by the following typical case.

CASE 4.—K. G., a woman aged 42, was admitted on Feb. 7, 1947 with hypertension and hyperthyroidism of one year's

standing. She had attacks of headache, heart pounding, epigastric distress and pronounced sweating. These attacks were associated with hypertension (220 systolic and 130 diastolic) and glycosuria. The eyegrounds showed slight sclerosis of the retinal vessels with a slight haziness of the temporal margin of the left disk. These were seen by the same ophthalmologist who had seen the retinas of the children and were not characteristic of pheochromocytoma. Her basal metabolic rate was +23 per cent. The fasting blood sugar was 153 mg. per hundred cubic centimeters and nonprotein nitrogen 24 mg. Phenolsulfonphthalein excretion was 80 per cent in two hours. The serum sodium was 140.7 mg. The benzodioxane test showed a fall of blood pressure to 135 systolic and 80 diastolic, with a rise gradually in fifteen minutes to the level before injection. The intravenous pyelograms showed a normal pair of kidneys with increased motility. The air insufflation roentgenograms showed an ovoid tumor above the right kidney in the area of the right adrenal.

Through a transverse epigastric incision a pear-shaped tumor of the right adrenal was removed transperitoneally. There was the pronounced elevation of the blood pressure on ligation of the blood supply without handling of the tumor, as usually seen, and a rapid fall following removal. Epinephrine slowly administered intravenously gradually raised the systolic blood pressure from 60 to 100 in eight hours. Since removal of the tumor, after an uneventful recovery, her blood pressure remained on the average of 120 systolic and 80 diastolic for two months. At that time her basal metabolic rate was -5 per cent and she occasionally had a small amount of sugar in her urine.

The history characteristic of the classic syndrome with the establishment of presence of excess epinephrine by the antagonist and the delineation of the tumor by air insufflation roentgenograms made the diagnosis certain. The immediate fall of blood pressure and the gradual return to normal are characteristic of the removal of the usual solitary tumor.

A number of metabolic changes have been found with the syndrome. Hypermetabolism is of frequent occurrence and a differential diagnosis between hyperthyroidism and pheochromocytoma is sometimes difficult. In 1 of our children the lessened blood iodine level and poor response to administration of potassium iodide made the diagnosis of hyperthyroidism not tenable.

Elevation of serum potassium and increased urea clearance have been found. Increased peripheral blood flow is present. Reduction of cutaneous temperature occurs with the increased peripheral resistance. Profuse sweating which occurs with the ending of the attack dissipates the excess heat due to increased heat production and prevents a rise in temperature.

The glycosuria present may confuse the diagnosis and be resistant to the ordinary treatment of diabetes mellitus, and removal of the tumor may relieve both the hypertension and the glycosuria, as reported in the case by Duncan, Semans and Howard.¹⁰ This patient was older than the usual patient. We have noticed that the sugar changes occurred as the patients were older. In the 3 children reported on in this paper, the usual changes in blood sugar and urine were not associated with the syndrome. One patient (our

8. Beer, E.; King, F. H., and Prinzmetal, M.: *Ann. Surg.* **106**: 85, 1937.

9. Roth, G. M., and Kvale, W. F.: *J. Lab. & Clin. Med.* **30**: 366, 1945.

10. Duncan, L. E., Jr.; Semans, J. H., and Howard, J. E.: *Ann. Int. Med.* **20**: 815, 1944.

case 4) had glycosuria after removal of the tumor with abatement of all other symptoms.

Hysteria and psychoneurosis may present difficulties in determining whether a pheochromocytoma is present, as has been pointed out by Van Epps¹¹ and myself. In spite of failure to find positive evidence of excessive epinephrine by the benzodioxan test and although the adrenal glands appeared normal in air insufflation roentgenograms, when there were a suggestive history and simulated attacks exploration was done in a number of these cases in the hope of finding an extra-adrenal pheochromocytoma. The failure to observe a tumor gave us increased confidence in the benzodioxan test.

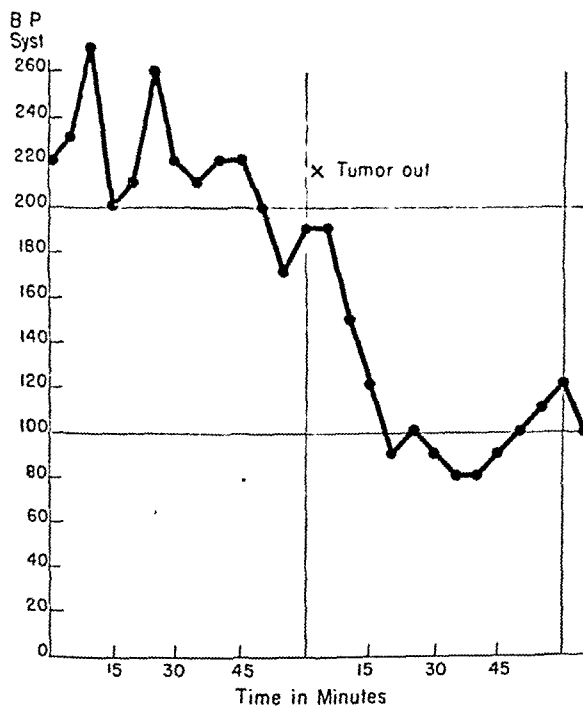


Chart 9 (case 4).—The systolic blood pressure recordings during operation. There was a rise in blood pressure on ligation of the tumor vessels and a pronounced fall to low levels after removal. This is the more frequent recording seen and occurs with solitary tumors.

The use of benzodioxan derivatives as indicators of excess epinephrine was first suggested by Goldenburg, Snyder and Aranow.¹² A simple method for this determination was sought because the use of a modified Pissenski method as reported by Beer, King and Prinzmetal⁸ was difficult and cumbersome and the apparatus and material available only in certain laboratories. A simple intravenous injection of a benzodioxan derivative with blood pressure studies was introduced by Goldenburg, Snyder and Aranow¹² in our case 1, with apparent confirmation of the finding of excess epinephrine and of the diagnosis. Since then they have shown that the blood pressure level in patients with "essential hypertension" is not influenced by the injection of the drug and that all other simulating syndromes

showed no changes in blood pressure. They also showed that in the 4 proved cases of syndromes due to pheochromocytomas the fall in blood pressure following the injection of the drug was significant and of diagnostic importance and that it apparently occurs only with excess secretion of epinephrine, and that in the 3 surviving patients no changes occurred in the blood pressure postoperatively after injection of the drug.

The histamine test was described by Roth and Kvale,⁹ who observed that intravenous injection of 0.05 mg. of histamine could immediately precipitate a hypertension crisis in a patient with pheochromocytoma. This we have not experimented with, because the recent positive cases were too serious to risk and that the diagnosis was established otherwise. We have, however, used the histamine test in those cases in which the reaction to the benzodioxan test was negative in order to have a double check, and in not any of such cases was the histamine test positive in result.

The use of air insufflation roentgenograms has been a safe and reliable indicator when the tumor is of the adrenal gland, and it is most satisfactory with small adrenal tumors that can be localized by no other method. Attempts made to delineate extra-adrenal tumors by fascial insufflation have not been very successful, having shown only one at the bifurcation of the aorta. The sealing of the fascial planes around the other tumors prevented the air from disseminating and outlining them.

TECHNIC

There has been a lowering of the mortality rate in surgical therapy of these tumors. The use of tribromoethanol in anesthesia induction has avoided precipitation of an attack. Epinephrine and adrenal cortical hormone should be available at operation and used if needed both during operation and afterward. One patient of ours with Cushing's syndrome and pheochromocytoma required cortical hormone subsequent to operative removal because of acute cortical adrenal deficiency after operation. Blood pressure readings are necessary almost continuously during operation. With multiple tumors the transperitoneal route has been more frequently used by us, although a high lumbar approach may be satisfactory for adrenal tumor. The handling of the tumor has been dangerous and should be reserved until all the vessels surrounding and connected with the tumor are ligated. The situations of some tumors make handling of the blood supply difficult and in some, such as our case 2, in a child with a large tumor between the vena cava and the aorta, temporary occlusion of the vena cava above and below the tumor may be necessary to prevent the escape of a lethal dose of epinephrine into the circulation. The use of the benzodioxan in that case in the small amount employed was without avail, probably because of the large amount of epinephrine released.

Following removal of a secreting tumor the immediate fall in blood pressure may be alarming. Intravenous administration of epinephrine has satisfactorily controlled this drop. A return to normal has been the

11. Van Epps, E. F.; Hyndman, O. R., and Greene, J. A.: Clinical Manifestations of Paroxysmal Hypertension Associated with Pheochromocytoma of Adrenal, *Arch. Int. Med.* 65:1123 (June) 1940.

12. Goldenburg, C.; Snyder, H., and Aranow, H., Jr.: *J. A. M. A.* 135:971 (Dec. 13) 1947.

usual result when all the excess epinephrine tissue has been removed. A rapid elevation of the systolic blood pressure in ten minutes or less following removal of the tumor and the elevation to near its former levels in our experience is an indication that a second tumor is present.

The postoperative care has been the one of combating an apparently depleted epinephrine state with accompanying low blood pressure. This has been successful with intravenous infusions with epinephrine. Studies of sodium and potassium balance showed only in 1 case a change suggestive of cortical depletion and that was in a case with associated mild Cushing's disease.

Most of these tumors are benign and unilateral; MacKeith's review, as stated before, indicated that 9 per cent were malignant and 9.7 bilateral. In 9 of his reviewed 165 cases there was an associated cutaneous neurofibromatosis, and these tumors were all bilateral.

In 2 of our 14 cases there were presumed to be metastases and the tumors were considered to be malignant. Attempts made by Masina¹³ to grow our recent tumors in the anterior chamber of the eye of rodents has been unsuccessful. All tumors seen by us were of chromofin and ganglion cells. They contained abnormal amounts of epinephrine by assay, and the abnormal amounts were demonstrated as present in the tissue by staining methods.

SUMMARY

Pheochromocytomas occur mostly in the adrenal but do occur in other pheochrome tissue. The syndromes are due to excess epinephrine released into the blood. They may give typical syndromes of paroxysmal hypertension or may resemble essential hypertension. They may occur at any age, and the tumors may be multiple. The steps in the diagnosis are illustrated, and the diagnosis is often certain.

ABSTRACT OF DISCUSSION

DR. EARL E. EWERT, Boston: That Dr. Cahill and his group should receive the gold medal for their classic work is no surprise. His experience with adrenal tumors extending over some twenty-five years has generated in all the appreciation that this one sort of rarity is more common clinically than has been suspected. The food for thought that he has offered is that persistent hypertension may be present in adrenal tumors and this more commonly in children; that a normal glucose tolerance range may be present and that sugar is absent from the urine and there is no elevation of the blood sugar; that adrenal chromaffin tumors may be multiple and extrarenal; that removal of a single chromaffin tumor without relief indicates the presence of an extrarenal tumor. Other observations that my associates and I have made in a small series are: In every patient with peculiar vasomotor paroxysms the possibility of a pheochromocytoma must be investigated. All hypertensive patients undergoing sympathectomy should have besides their normal routine urograms some of the specific diagnostic tests. Also, patients with typical epileptiform seizures should be considered as possibly having chromaffin tumors. A "mecholyol bromide" test is added to those that have already been given and to the new test that Dr. Cahill mentioned, the dioxan test. The "mecholyol" test consists of administering 25 mg. of the drug subcutaneously after a period of rest to obtain a stabilized blood pressure and pulse rate. The blood pressure and pulse rate are then recorded after "mecholyol" is given at one minute intervals, until they return to normal, in fifteen or twenty or thirty minutes. A positive reaction is shown by a decided rise in systolic and diastolic pressures. In the case tried, there was

a rise of 106 mm. of systolic blood pressure and 60 mm. of diastolic blood pressure above the resting level following a preliminary fall lasting about one minute. The pressure returned to normal in fifteen minutes. Associated with the rise in blood pressure were all the symptoms characteristic of a paroxysmal attack of hypertension due to a chromaffin tumor. In addition, the patient experienced the side reactions of "mecholyol," which include nausea, asphyxia livida, sweating and dyspnea, which may be controlled by the administration of atropine. The controls were tried in 27 additional patients, ages 20 to 60; 7 were normal and 20 had hypertensive vascular disease. In the 27 controls, the reaction was positive in all, and of the 22 patients in whom the cold pressor test was performed, 17 showed a normal response and 5 showed a rise of more than 20 mm. and may be considered as hyperreactors. Of the 9 patients in this group on whom histamine was tried, 5 had a rise in blood pressure of 20 mm. or more and are considered as hyperreactors. During operation the sharp drop in diastolic pressure is the point at which the patient may be lost. This is the crucial point. The operation for pheochromocytoma is delicate; the internist and the anesthetist must be conscious of the catastrophe which may occur suddenly in manipulation of the tumor, even when ligation of the vessels has been taken care of before removal of the tumor and when one thinks that he has been especially careful not to manipulate the tumor and discharge amounts of pressor substance into the blood stream.

DR. SEYMOUR F. WILHELM, New York: About fifteen years ago, Dr. Cahill discovered that the injection of air or gas into the perirenal space was of great aid in visualizing the larger adrenal tumors. However, in the delineation of the normal adrenal gland, the lesser enlargements, and the smaller tumors, my associates and I have found the simple roentgenogram following perirenal insufflation disappointing. We have been unable definitely to make up our minds as to the size of the adrenal gland or the absence or presence of any enlargement. We looked for other methods and tried laminography, by means of which a definite section of the body can be localized and the tissues above and below eliminated or blurred. By this means, we have been able to get rather sharp pictures of the normal adrenal and also of the lesser enlargements. I would like to ask how much adrenal gland tissue can be resected from the human being without causing Addison's disease. I have a female pseudohermaphrodite who had hyperplasia of both adrenals from whom I successfully resected the entire left adrenal gland, weighing 21 Gm., and about half the other adrenal. I would appreciate Dr. Cahill's telling us something about his experiences.

DR. GEORGE F. CAHILL, New York: I want to congratulate Dr. Wilhelm for going on with his laminographic work, which is really good. He has developed the simple thing that we had started with and carried on and has really advanced the outlining and the interpretation of these films definitely. As far as the amount of adrenal tissues to remove, that is difficult. One can take out one adrenal completely, but when one resects an adrenal, it is difficult to handle the hemorrhage. For the part of the adrenal left one does not know how much blood supply has been disturbed; there may be thrombosis; all the adrenal tissues may be killed. Of course, there are accessory adrenals known as Marchand bodies, occurring anywhere from the adrenal to the gonad. Tumors have occurred of these, not of the adrenal itself, with cortical syndromes characteristic entirely of the adrenal cortical syndrome. However, one cannot be sure that a particular patient will have some more Marchand bodies. I do not know yet how much adrenal to take out. I err on the side of leaving some in. The pheochromocytoma is extraordinary. The whole thing is dramatic. It is the only hypertension that one cures the cause of. One can now definitely cure it with apparent safety with the exception of that ten minutes of handling the tumor. Once the surgeon gets past that point, usually he is all right. The patient goes on; some patients have cortical deficiency following the handling of the tumor, but the deficiency can be corrected. We had 1 patient that had both a Cushing syndrome and a pheochromocytoma in the same adrenal, so that the deficiency subsequent to the operation was cortical deficiency and we had to treat it like an addisonian crisis.

TREATMENT OF ADVANCED MAMMARY
CANCER WITH TESTOSTERONEMAX CUTLER, M.D.
and
MELVIN SCHLEMENSON, M.D.
Chicago

The purpose of this paper is to present the results in 20 consecutive cases of advanced mammary cancer in which testosterone propionate was used. The minimum observation period is one year.

Ulrich¹ (1939) was the first to describe testosterone therapy in advanced mammary cancer. Although the doses were too small to produce chemical castration, his 2 cases showed a favorable response. Loeser,² in the same year, reported 2 patients, who had recurrent mammary cancer, treated with testosterone for menorrhagia. They lived for eighteen months without further recurrence. It was not stated whether or not recurrence was present at the beginning of testosterone therapy. Prudente³ used testosterone prophylactically following mastectomy in doses adequate to produce ovarian suppression.

So far as we can determine, 92 cases of advanced mammary cancer treated with testosterone have been recorded in the literature; in addition, Prudente³ has studied the prophylactic effect in 63 cases and Snapper⁴ has treated 29 patients prophylactically with combined castration (surgical or with roentgen rays) and testosterone. In January 1948, Adair⁵ wrote that 450 patients had been treated and observed by his group; 233 treated for advanced cancer and 217 treated prophylactically following radical mastectomy. Of the group with advanced cancer, 28 cases of advanced cancer have been reported in the literature up to the present writing.

Isolated favorable results in advanced cases have been reported.⁶ These include cases of both soft tissue lesions and skeletal metastases. In Snapper's⁴ 29 cases, castration (either surgical or with roentgen rays) combined with testosterone therapy did not protect against the subsequent development of distant metastases in cases with axillary involvement at the time of operation. Prudente³ reported that in his 63 patients treated with radical surgical intervention and testosterone, the

instances of three, four and five year survivals were increased by approximately 100 per cent as compared with a series treated with surgical intervention alone.

TESTOSTERONE

The property of testosterone for increasing the retention of sodium and potassium has been well established (Thorn and Engel,⁷ Kenyon and his co-workers⁸). In addition, Kenyon and his co-workers⁸ and Abels, Young and Taylor⁹ have demonstrated increased protein nitrogen retention. Kenyon and his colleagues⁸ treated 4 eunuchoid persons with testosterone propionate and observed a gain in weight due largely to water held in association with the sodium and nitrogen. Butler, Talbot and MacLachlan¹⁰ concluded from their studies that potassium was retained primarily in the tissue fluids. The electrolytes and nitrogen retain water; consequently a gain in weight occurs. The increased weight is lost rapidly following cessation of treatment. Thorn and Engel⁷ noted that decided diuresis and loss of weight occurred seventy-two hours after testosterone therapy was stopped. In addition, there was increased excretion of sodium, chlorides, potassium, inorganic phosphorus and total nitrogen. Thus, the evidence indicates that the electrolytic effect, in association with the protein nitrogen retention, is responsible for a transient rather than a permanent gain in body weight. For these reasons, a gain in weight *per se* does not necessarily indicate a favorable influence on the disease. This effect was observed clinically in several patients in whom peripheral edema developed while they were receiving testosterone. It is for this reason that testosterone must be used cautiously in patients with cardiac disease.

The changes in blood calcium and blood phosphorus during testosterone therapy are not well understood, and there is a decided divergence of opinion in the literature. Adair⁵ has described decided reduction in the serum calcium level in patients with metastasis to bone and has interpreted this decrease as evidence of calcium deposition in bone or a cessation of osteolysis. In none of his reported cases which responded favorably was there a change in the serum calcium which could be interpreted as significant. Snapper⁴ reported 29 patients treated with castration and testosterone and noted no significant change in the serum and phosphorus. Farrar and Woodard⁶ treated 33 patients with smaller doses of testosterone and reported an increase in serum calcium in some cases. Adair and Herrman¹¹ have noted that in patients with decidedly elevated serum calcium the condition of the patient is aggravated by testosterone therapy, and they have intimated that the drug should not be used under those conditions. While this, in general, is true, we have recently seen a patient with an elevated level of serum calcium who showed no untoward effects following administration of large doses of testosterone propionate. The level of the blood phosphorus has not proved to be of value in the evaluation of testosterone therapy.

Alkaline phosphatase is present where there is osteoblastic activity. This osteoblastic activity may be either reparative following osteolytic metastases or it may

From the Chicago Tumor Institute.
Dr. Schlemenson is a trainee of the National Cancer Institute.
The testosterone propionate ("oreton") used in this study was made available by the Schering Corporation, Bloomfield, N. J.

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3. Prudente, A.: Postoperative Prophylaxis of Recurrent Mammary Cancer with Testosterone Propionate, *Surg., Gynec. & Obst.* 80: 574, 1945.
4. Snapper, I.: Castration Combined with Testosterone Treatment After Mastectomy for Breast Cancer, *J. Mt. Sinai Hosp.* 14: 618, 1947.
5. Adair, F.: Testosterone in the Treatment of Breast Cancer, *M. Clin. North America* 32: 18-36, 1948.
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represent osteoblastic metastases, or, and most important, it may represent a combination of both processes existing simultaneously. Thus a rise in the level of alkaline phosphatase may mean more osteoblastic metastases rather than repair of osteolytic lesions. Adair and Herrman¹⁰ have reported one case with favorable response in which there was a rise in the level of alkaline phosphatase accompanying the calcification of the skeletal metastases. It must be borne in mind, however, that the level of the serum alkaline phosphatase is dependent on the degree of osteoblastic activity. Since it is well established that metastasis to bone without treatment may cause a rise in the level of serum alkaline phosphatase, it is our belief that this index is not a safe criterion of response to treatment.

Subjective changes which occur in patients receiving testosterone are well known. These include hoarseness, facial hirsutism and other signs of virilism; in addition, there is usually a decided increase in libido. This latter effect has been well described by Abel.¹¹ Enlargement of the clitoris and development of an acneiform eruption on the trunk also occur and are usually very disturbing. Geist and his co-workers¹² have demonstrated that as a rule more than 200 mg. of testosterone propionate per month is required to produce masculinization and cessation of menses. These effects are lost slowly after treatment is discontinued. A sense of well-being and some relief of discomfort is common, but this effect is usually transient. In our cases, once the favorable systemic effect of testosterone was lost, another course of testosterone did not renew the initial effect; however, Herrman, Adair and Woodard¹³ have reported cases in which the response to a second course of testosterone duplicated the favorable response of the first.

REPORT OF CASES

Twenty consecutive patients were treated; 19 had carcinoma and 1 had lymphosarcoma. Twelve showed no significant improvement; 11 of these died within one year after the beginning of treatment, and 1 died after fourteen months. Six of the 12 patients had only soft tissue involvement; the other 6 had only skeletal metastases. It is interesting that 3 patients experienced skeletal metastases while under treatment. We have no evidence that the disease was accelerated in any of the 12 cases which did not respond. There were no unusual reactions to the treatment.

Four cases showed transient improvement. In 1, multiple cutaneous nodules on the thoracic wall showed decided regression; however, the systemic disease became progressively worse, and the patient died from cancer. In a second case, a fixed ulcerated mass in one breast became more movable, but the ulceration increased. There was a temporary gain in weight and a decided improvement in her general condition; the effect, however, was transient. The disease became more progressive, and cancer developed in the opposite breast. In a third case, with pleural involvement and a severe cough, a sense of well-being was established and the cough diminished. Shortly after testosterone therapy was omitted, the condition became worse and the disease progressed. The history of the fourth case is presented in detail.

CASE 1.—C. C., a woman aged 66 years, was admitted in April 1944, complaining of a mass in the right breast. Examination disclosed the classic clinical signs of cancer. There

was no evidence of metastasis. Because of the patient's general condition, the operation (April 12) was limited to a simple mastectomy. Microscopically, the lesion was carcinoma. The intramammary lymph nodes were involved. Roentgen therapy was given to the axilla. There was no evidence of disease until May 12, 1945, when a small lymph node developed in the right axilla. July 30, 1946, the node measured about 3 by 3 cm. Roentgenograms of the chest, lumbar part of the spine and pelvis showed no metastasis. The chemical content (calcium, phosphorus and alkaline phosphatase) and structure of the blood and the urine were normal. On June 30, 300 mg. of testosterone propionate ("oreton") was injected intramuscularly and 150 mg. twice weekly until a total of 3,750 mg. had been given. After six weeks the node was slightly smaller, and at the end of eleven weeks it was barely palpable. The patient gained 6 pounds (about 3 Kg.) and felt well. The usual signs of masculinization were present. On October 18, intramuscular administration of testosterone was omitted and oral administration of 30 mg. of testosterone daily was begun. After two weeks the dose was reduced to 10 mg. daily. Examination remained the same until July 3, 1947, when a node of 2 cm. was again palpable in the axilla. The amount of testosterone given orally was increased to 20 mg. daily. The node became progressively larger, and on September 11 a right axillary dissection was performed. No evidence of carcinoma was seen in the specimen. There was no evidence of disease at the last examination, on April 29, 1948.

Comment.—There was no question in our minds that, clinically the node palpated in the axilla before the start of testosterone therapy was characteristic of metastatic carcinoma. Unfortunately, no tissue was removed for microscopic examination, and it is possible that our impression was not correct. Therefore, in this case we cannot make any statement concerning the effects of testosterone therapy. However, we have another case, not included in this report, which is almost identical with the one previously described except that methyl testosterone was used and, when the axillary dissection was performed, the specimen did show carcinoma. That patient subsequently showed evidence of widespread metastases.

These 4 cases represent the borderline group in which it is difficult to evaluate the effects of the medication. The possibility that the temporary response was coincidental cannot be excluded. It is more likely, however, that testosterone did play some role in the regression of the disease. In each of these 4 cases the disease at the time of treatment was confined to soft tissue.

Four cases showed definite improvement: 1 with skeletal metastases, 1 with skeletal and soft tissue metastases and 2 with soft tissue involvement. The case histories follow.

CASE 2.—J. C., a woman aged 42 years, was admitted on June 1, 1942, with a mass in the axillary portion of the left breast. Observations in roentgenograms of the chest were normal. On July 3 radical mastectomy was performed. The microscopic diagnosis was carcinoma. The axillary glands were not involved. There was no evidence of disease until April 26, 1946, when roentgenograms of the chest showed increased hilar adenopathy. Symptoms did not appear until October 25, when the patient began to complain of dyspnea and pain in the chest, pelvis and left leg. Roentgenograms of the chest showed pleural effusion on the right side. Examination of the thoracentesis fluid disclosed carcinoma cells. There was definite nodularity in the left supraclavicular space. Roentgenograms showed a large osteolytic lesion in the left iliac crest (fig. 1A) and a small lesion in the right femur. The chemical content (calcium, phosphorus and alkaline phosphatase) and structure of the blood and the urine were normal. On October 25, 30 mg. of testosterone propionate ("oreton") was injected intramuscularly, and 150 mg. was given twice weekly

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until a total dose of 4,050 mg. had been given. The dyspnea disappeared after two weeks. The fluid in the chest was almost completely absent according to roentgenologic studies on Jan. 1, 1947. On April 22 the osteolytic areas showed decided calcification and trabeculation (fig. 1B). Except for the facial hirsutism, the patient was comfortable. Intramuscular admini-



Fig. 1 (case 2).—A, before treatment. B, after treatment.

istration of testosterone was discontinued on January 20 and oral administration of 30 mg. of testosterone daily was begun. The masculinization was maintained, and, after 900 mg. had been taken orally, the dose was reduced to 10 mg. daily on September 27. At that time the patient complained of headache and diffuse pain in the chest. Her condition became progressively worse; on November 3, dyspnea increased, she was losing weight and her general condition was deteriorating. Skeletal metastases became more widespread. Sixteen hundred cubic centimeters of fluid was aspirated from the chest. On November 3, 300 mg. of testosterone propionate ("oreton") was injected intramuscularly, and 150 mg. was injected twice weekly. This was continued for six weeks, but the patient's condition became progressively worse and she died on December 20.

Comment.—This case illustrates that soft tissue and skeletal metastases may be affected favorably in the same patient. It is also noteworthy that a second course of testosterone had no effect on the progress of the disease. The testosterone therapy suppressed menstruation permanently. There were no menopausal symptoms. The improvement lasted for eleven months.

CASE 3.—J. O., a woman aged 58 years, was admitted on Sept. 17, 1946. She complained of a lesion on the scalp of five months' duration. A report of biopsy was "suggestive of malignant growth." There was a raised red scaly lesion, 5 by 5 cm., on the left side of the scalp (fig. 2A). There was no hair in this area. The lesion was believed to be metastatic. With great hesitancy, the patient finally admitted that she had known of a lump in the left breast for several years and consented to an examination. In the left breast there was a large ulcerated lesion, with induration of the entire breast, and multiple cutaneous nodules extending into the left

axilla. The right axilla contained a firm node 2 by 2 cm. Multiple small subcutaneous nodules extended onto the abdomen. In addition, there was a hard mass, suggestive of intra-peritoneal metastases, in the right lower abdominal quadrant. Roentgenograms of the chest and lumbar part of the spine showed no evidence of metastasis. Biopsies from the scalp and thoracic wall showed carcinoma. Sept. 19, 1946 the blood chemistry and morphology as well as the urine were normal. On September 18, 300 mg. of testosterone propionate ("oreton") was injected intramuscularly and 150 mg. twice weekly, until 4,650 mg. had been given. During the first two weeks the patient complained of abdominal cramps and nausea. There was a decided response. The scalp lesion healed, and hair grew in the area (fig. 2B). The lesion of the breast regressed, and many of the metastatic nodules resolved. The patient gained 13 pounds (about 6 Kg.). There was no significant change in the chemical content of the blood. On December 30, intramuscular administration of testosterone was discontinued and oral administration of 30 mg. of testosterone daily was begun. The masculinization persisted, and the patient felt well. All the lesions continued to regress. On Feb. 21, 1947, the amount of orally administered testosterone was reduced to 20 mg. daily. Masculinization was still present. On March 4 the patient began to complain of pain in the back. Roentgenograms showed metastases to the skull, lumbar vertebrae and lungs. Testosterone therapy was discontinued, and 7.5 mg. of diethylstilbestrol monomethyl ether ("monomesterol") daily was given. The pain in the back did not improve; treatment with diethylstilbestrol monomethyl ether was stopped, and on May 12 roentgen rays were given to the lumbar part of the spine, with complete relief of pain. The patient continued to feel well for approximately five to six months, despite multiple meta-



Fig. 2 (case 3).—A, before treatment. B, after treatment.

stases; however, her condition became progressively worse, and metastases to the liver and other organs developed. She died on June 7, 1948, twenty-one months after the beginning of hormone therapy.

Comment.—The healing of the scalp metastases and regression of the cutaneous nodules represent definite evidence of the effect of testosterone on the soft tissue metastases. Interesting microscopic changes in the

composition of the tumor in a series of biopsies were seen. Skeletal metastases developed in this patient while she was receiving masculinizing doses of testosterone. The use of large doses of estrogenic substances did not alter the course of the disease.

CASE 4.—C. V., a woman aged 43 years, was admitted June 3, 1947. In August 1944 a left radical mastectomy was performed for cancer followed by postoperative radiation. The patient was well until March 1947, when she began to complain of pain in the pelvis. Roentgenograms showed complete destruction of the inferior ramus of the left pubis and ischium; there were also destructive lesions in the right femur and right humerus (fig. 3A). Between March 15 and April 16, small doses of roentgen rays had been given to the pelvis, lumbar part of the spine and right shoulder at another hospital, without relief. There was no external evidence of disease except a slight limp. On June 17 she received 300 mg. of testosterone propionate ("oreton") intramuscularly and 150 mg. twice weekly thereafter, up to a total dose of 3,850 mg. This was followed by oral administration of a maintenance dose of 60 mg. of testosterone daily. After two months, the bone lesions began to calcify and there was complete absence of pain (fig. 3B). This palliation continued until April 1948, when again the patient complained of pain in the shoulder and pelvis. Roentgenograms showed increase in the osteolytic metastases. Another course of testosterone was begun, but the disease continued to progress.

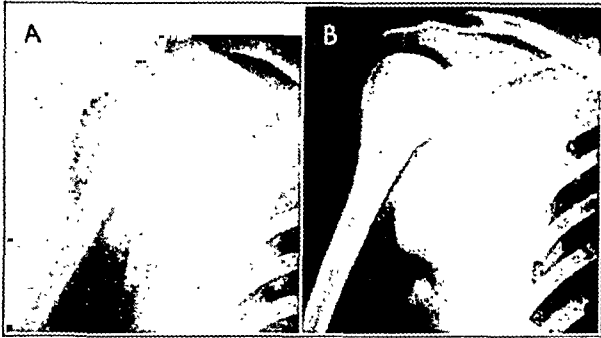


Fig. 3 (case 4).—A, before treatment. B, after treatment.

Comment.—The effects of the roentgen therapy and testosterone therapy cannot be entirely separated in this case; however, the fact that the patient did not receive any appreciable relief from the roentgen therapy, but did show decided improvement after the testosterone therapy was begun, makes it reasonable to assume that the effect was due primarily to the testosterone.

CASE 5.—N. T., an obese diabetic Negro woman aged 62 years was admitted Dec. 10, 1946, complaining of a mass in the right breast of two years' duration. Examination disclosed a hard fixed mass, 10 by 7 cm., in the upper outer quadrant of the right breast. There was definite cutaneous adherence and linear induration extending into the axilla. The size of the mass and its position prevented the arm from coming against the thoracic wall. Roentgenograms of the chest, lumbar part of the spine and pelvis did not reveal metastasis. Decided cardiac enlargement was evident. A clinical diagnosis of cancer was made, and a radical mastectomy advised. The patient categorically refused major surgical procedures. A biopsy showed carcinoma. On December 17, 300 mg. of testosterone propionate ("oreton") was injected intramuscularly and 150 mg. twice weekly, until 2,250 mg. had been given. On Jan. 2, 1947, after administration of only 900 mg. of testosterone, there was definite regression of the breast tumor and the patient stated that she was again able to put her arm by her side. At this time she complained of weakness, and there was increased swelling of the ankles. These symptoms were attributed to increasing cardiac decompensation resulting from water retention; however, testosterone therapy was continued. On February

15 the mass showed further regression and the linear extension into the axilla was no longer palpable. Because of the cardiac problem, testosterone therapy was discontinued and the residual mass was treated with radiation. Telecurietherapy was administered to the residual tumor between February 17 and March 23. The tumor continued to regress, and by December 29 it had disappeared; there was, however, a firm lymph node in the right axilla. The patient did not return again until Feb. 24, 1948, at which time the tumor had recurred, forming a mass 7 by 7 cm., with a cutaneous nodule 0.5 cm. in diameter. Biopsy of this nodule showed metastatic carcinoma. A roentgenogram of the chest at this time did not reveal metastasis.

Comment.—The caution which must be exercised in treating patients with cardiac disease is illustrated in this case. The effect of testosterone on the breast tumor and the subsequent further regression with telecurietherapy constitute a good example of the response of soft tissue metastases to these agents.

COMMENT

The favorable effects of testosterone on the course of the disease in some cases of advanced mammary cancer are reported; the response, however, is unpredictable and transient. Adair⁶ reported 3 patients, in whom the disease was confined to bone, living without evidence of disease for eighteen to twenty-four months after treatment. In our 4 cases in which definite improvement was shown, recurrence developed within one year. The longest period of improvement was eleven months. From the available evidence it seems advisable to withhold testosterone therapy in advanced mammary cancer until other well established procedures have reached the limits of their usefulness. It is for this reason that we have not used testosterone prophylactically as practiced by Prudente³ and more recently by Adair⁶ and Snapper.⁴ Because several patients who obtained palliation from testosterone suffered a recurrence of the disease after treatment was stopped, it is suggested that treatment should continue until the palliative effect is no longer evident.

It must be remembered that surgical castration and roentgen sterilization frequently produce results which are comparable to those seen with testosterone therapy and these procedures should not be abandoned. It is true that the availability of a constitutional agent such as testosterone is a great comfort to both patient and physician; however, final evaluation is not possible until further and more prolonged studies have been conducted. At present, the Therapeutic Trials Committee of the Council on Pharmacy and Chemistry of the American Medical Association is conducting an extensive and coordinated study of testosterone therapy in advanced mammary cancer, which is being pursued by various groups throughout the country. It is hoped that this study will produce a significant number of cases, with treatment under controlled conditions, to permit more definite conclusions.

SUMMARY AND CONCLUSIONS

Twenty patients with advanced mammary cancer were treated with testosterone propionate ("oreton"). Twelve showed no significant improvement, and 11 of these died within one year after the beginning of the treatment. One patient with lymphosarcoma of the breast was not improved. Four patients showed transient improvement of short duration. The palliative effects of testosterone were striking in four cases, but the duration of response was limited. No evidence that testosterone therapy can cure advanced breast cancer was observed, and palliative results can be anticipated in only a relatively small number of patients.

PENICILLIN IN TETANUS
A Clinical Analysis of Fifty-Nine Cases

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The clinical picture of generalized tetanus has been known for thousands of years; its causative agent was discovered over sixty years ago; almost perfect methods of prophylaxis are known and being practiced, and yet the disease remains as one of the most dangerous infectious complications of wounds, because of the inadequate methods of treatment.

The studies of Abel and his co-workers¹ and Firor and his co-workers² have demonstrated that the value of tetanus antitoxin is limited once the symptoms of the disease are well established, and when an overwhelming amount of toxin is fixed by the cells of the central nervous system the invariable outcome is death.

Even if the outcome of generalized tetanus is always grave, there are patients that respond favorably to the limited but well known therapeutic measures. This is especially true among patients for whom treatment is started before the onset of the serious manifestations of the disease. In spite of early treatment and, at times, heroic measures, the mortality rate of the disease is still too high.

Although judgment of the outcome in tetanus is not always exact, it is known that a short incubation period, the rapid appearance of muscle spasms after onset, frequent and severe convulsions and a poor response to sedation are always signs of a poor prognosis. In these cases the physician is almost at a loss from the start.

In view of the inadequate therapeutic measures available for the management of the disease, the favorable reports on the use of penicillin³ and the demonstration that it is an antibiotic for *Clostridium tetani* *in vivo*,⁴ we were prompted to give it a fair trial in a large group of cases.

MATERIAL AND METHODS

During a period of twenty months, between July 1945 and March 1947, there were 2,364 medical admissions to the San Juan City Hospital. Fifty-nine (2.4 per cent) of the patients were suffering from tetanus. There were 38 white patients, of whom 26 were male and 12 female, and 21 were Negro, 13 being male and 8 female. The youngest was 8 years old and the oldest

70, with an average age of 22.7 years. There were 2 under 10, 25 under 20, 37 under 30, 49 under 40, 53 under 50, 58 under 60, and 1 was 70 years old.

The incubation period was known in 51 cases, varying between two days and three months. There were 15 with an incubation period between one and five days, 20 between six and ten days, 8 between eleven and fifteen days, 2 between sixteen and twenty days and 6 over twenty-one days. The average incubation period for the whole group was eight and four-tenths days and for the cases with fatal outcome five and seven-tenths days.

The portal of entry was discovered in 57 instances: the feet in 24, the leg in 8, the hand in 7, the arm in 7, the mouth in 2, the anus in 2, the uterus in 2, the abdominal wall in 2 and the penis, thigh and cheek in 1 instance each.

The nature of the lesion was evident in 54 cases. Puncture wounds due to rusty nails, splinters of wood, broken glass, tin cans and rusty wire were noticed in 17 cases. Chiggers were responsible for infection in 7 cases, lacerations in 5, abrasions in 5, ulcerations in 4, incised wounds in 3, abortions in 2 and hypodermic injections in 2 (a liver injection in the arm and an

TABLE 1.—Observations on Admission

Observations	Number of Cases	Percentage
Stiffness of the jaw.....	59	100
Trismus.....	59	100
.....	54	91
.....	52	88
.....	52	88
Restlessness.....	49	83
Back pain.....	48	81
.....	44	74
.....	35	60
Fever.....	34	58
Stiffness of the limbs.....	32	54
.....	29	49
.....	29	49
.....	21	35
Oppression of the chest.....	21	35
Headache.....	13	22

injection of fibrinogen in the abdominal wall). In 2 instances anal fissures were discovered and thought to be the portals of entry in the absence of any other open lesion. In another, a carious tooth was picked with a blunt instrument and in a few days the disease developed. Extraction of a tooth, an abscess of the cheek, a burn, a contusion, a human bite and a surgical wound for a herniotomy were each responsible for a case.

The disease in 56 of the cases was classified as generalized tetanus and in 3 as cephalic tetanus. No cases of the local disease were observed. Twenty-nine patients had convulsions before admission; this symptom developed in 12 after hospitalization (in 5 within the first twenty-four hours, 6 within forty-eight hours and 1 within seventy-two hours after admission), while 18 never suffered from this symptom.

The time between the onset of symptoms and the occurrence of convulsions or muscle spasms was known in 35 cases—in 10 within the first day, in 6 within two days, in 3 within three days, in 3 within four days, in 12 within five days, in 1 within six days, in 2 within seven days, in 2 within eight days, in 3 within nine days and in 1 each within thirteen, sixteen and twenty days. Two of the 12 patients in whom convulsions developed after admission died from the disease.

The most frequent clinical observations on admission were stiffness of the jaw, trismus, dysphagia, rigidity of the neck, abdominal rigidity, restlessness, back pain,

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hyperactive reflexes, spasticity of the limbs, fever, stiffness of the limbs, opisthotonos, convulsions, oppression of the chest and headache. Leukocytosis was present in 35 per cent of the cases (table 1).

On admission every patient received 100,000 units of antitetanic serum intravenously after a negative reaction to a dermal test for sensitivity. In the great majority of the cases 100,000 units was given intra-

TABLE 2.—Analysis of Deaths

Sex	Race	Age, Yr.	Lesion	Organ	In- cuba- tion, Days	Amount of Medication		Hospital Stay
						Tetanus Antitoxin	Penicillin	
M	N	19	Ulcer	Penis	6	200,000 u.	40,000 u.	7 hr.
M	N	44	?	?	1	200,000 u.	45,000 u.	10 hr.
F	W	54	Chig- gers	Foot	4	315,000 u.	660,000 u.	6 days
F	W	22	Caries	Molar	5	200,000 u.	140,000 u.	21 hr.
M	W	18	Lacera- tion	Arm	3	250,000 u.	1,560,000 u.	11 days
F	W	70	Puncture wound	Foot	13	270,000 u.	1,320,000 u.	9 days
F	N	28	Ulcer	Leg	1	200,000 u.	600,000 u.	6 days
M	W	55	Abscess	Cheek	4	350,000 u.	400,000 u.	3 days
F	W	16	Abortion	Uterus	7	245,000 u.	930,000 u.	8 days
M	N	22	Incised wound	Hand	5	180,000 u.	1,460,000 u.	5 days
F	W	39	Hypo- dermic	Arm	3	250,000 u.	100,000 u.	36 hr.
M	N	10	Puncture wound	Foot	7	300,000 u.	2,200,000 u.	15 days
Average....		33			5.7	251,667 u.	796,000 u.	5.5 days

muscularly as well. The portal of entry, when accessible, was debrided and excised when necessary, after the infiltration of the surrounding tissues with 20,000 units of antiserum. The lesion was left open and treated locally with hydrogen peroxide compresses. Daily intramuscular injections of 5,000 to 10,000 units of antiserum were given for the next three days. Forty-two patients received more than 250,000 units of the antiserum. Two thousand to 4,000 cc. of 5 per cent dextrose in isotonic sodium chloride solution was given intravenously in accordance with the patients' needs for hydration, and an indwelling stomach tube was left in situ for the nutrition of the most seriously ill patients. Phenobarbital sodium was given hypodermically in doses of 2 grains (0.13 Gm.) or more every two to three hours for the control of convulsions. In some cases we had to resort to a mixture of ether and oil given by rectum to relieve the painful convulsions. Treatment with penicillin, in doses of 15,000 to 20,000 units intramuscularly every three hours, was started on admission, and the total unitage of the drug was not limited.

RESULTS

There were 12 patients who died and 47 who recovered, with a gross mortality rate of 20.3 per cent. The average hospital stay for the whole group was nineteen days and for the patients that died five and five-tenths days. The average length of life after the onset of symptoms in the cases in which the disease was fatal was eleven and six-tenths days. Four lived for seven, ten, twenty-one and thirty-six hours, respectively, after admission. These did not receive the full benefit of treatment. Only 8, therefore, could be considered as hospital deaths, the hospital mortality rate being 13.5 per cent. The 59 patients received an average total of 1,800,000 units of penicillin, while the 12 that died received an average of 796,000 units. It is known that the clinical improvement in most established infections

usually occurs within eighteen to seventy-two hours after the beginning of treatment with penicillin. Granting that the drug was beneficial, 8 patients were given full chance for improvement or recovery, 2 a partial chance and 2 were not given enough drug to benefit them at all. The mortality rate in spite of efficient penicillin therapy was, therefore, 17.6 per cent (10 deaths) (table 2). If the total unitage of the drug were considered as essential in the control and cure of the infection, perhaps the relatively small amounts given to 4 of the patients would explain the fatal outcome, but other factors may have been responsible, since much heavier doses failed to save the life of the other 8. The average amount of tetanus antitoxin administered to the 59 patients was 260,000 units, while the patients in whom the disease terminated fatally received 251,666 units. The difference was so slight that the amount of antitoxin had little to do in the issue of life or death. It was evident that as an adjuvant penicillin produced beneficial effects, as demonstrated by the low mortality rate. Obvious benefit from the drug was recorded among 11 patients with bronchopneumonia complicating tetanus. Seven of these recovered, and 4 died.

The duration and frequency of the convulsions were not benefited by either penicillin or tetanus antitoxin. Two of the patients who died had received large doses of antitoxin before the onset of convulsions, and in both the disease was classified as mild. It is evident that in these 2 patients the outcome could not be determined on admission.

Among the 26 white male patients in this series only 2 died, yielding the surprisingly low mortality rate of 7.6 per cent, while of the 13 Negro male patients 30.8 per cent died. Of the 12 white female patients 5 died, with a mortality rate of 41.7 per cent, while of the 8 Negro female patients 1 died, with a mortality rate of 12.5 per cent. Thus, the mortality rate among the white persons was 15.4 per cent and among the Negroes, 30.0 per cent (table 3). This difference in the mortality rate in the two races is unexplained, since there was no gross difference in the incubation period, nature of the lesions and portal of entry in the two groups. By the same token, the difference in the mortality rate of male patients as compared with that of female patients lacks an explanation.

From the data presented in this paper it appears that tetanus is a more serious illness among patients older than 50 and younger than 10, as evidenced by a 50 per cent mortality rate among those older than 50 and

TABLE 3.—Mortality Rate: Sex and Race

	Male	No. of Deaths	Per-centage	Female	No. of Deaths	Per-centage
White.....	26	2	7.6	12	5	41.7
Negro.....	13	4	30.8	8	1	12.5
Total.....	39	6	15.4	20	6	30.0

younger than 10, as compared with 15.5 per cent among those between 11 and 50 years of age, but there were only 2 patients younger than 10 and 6 older than 50. Perhaps a larger series would have yielded different results (table 5).

Six deaths (40 per cent) were recorded among the 15 patients with an incubation period of five days or less, 3 (15 per cent) of the 20 with an incubation of six to ten days and only 1 (12.5 per cent) among those with an incubation period of more than ten days. Two of the patients with no known periods of incubation died from the disease, but the rapid clinical course in these

2 suggests that it was relatively short (table 4). Among the 10 patients in whom convulsions appeared within twenty-four hours after onset of the disease, 6 (60 per cent) died; within the first forty-eight hours 3 (50 per cent) died, and within seventy-two hours 2 (33.3

TABLE 4.—Incubation Period and Mortality Rate

Number of days.....	Incubation Period				Mortality Rate	
	1-5	6-10	11-15	16-20	Over 21	Total
Number of cases.....	15	20	8	2	6	51
Number of deaths.....	6	3	1	..	..	10
Mortality.....	40%	15%	12.5%	0%	0%	19.6%

per cent died. Information was not obtained in the other 3 fatal cases. These observations substantiate the relationship of a high mortality rate with a short incubation period and a rapid onset of convulsions (table 6).

The mortality rate among those patients with a portal of entry in the lower extremity was 13.3 per cent, of those in upper extremities 29 per cent, in the trunk

pneumonia and in 1 to extreme dehydration. Severe serum sickness contributed to 1 death. Milder reactions to antitetanic serum were seen in 4 patients who recovered. No causative agent was demonstrable in the cases of bronchopneumonia, but we suspect that in the fatal cases either the causative agent was penicillin resistant, the drug was not administered in large enough doses to effect a cure or these may have been instances of severe aspiration pneumonia.

COMMENT

The potential value of penicillin in the treatment of tetanus has been explored by various investigators, and the results have been controversial. An exact evaluation of the usefulness of the drug is at present impossible, since few planned clinical studies have been made and the great majority of reports in the literature are based on small groups of cases.

A clinical study of 59 cases of tetanus is hereby presented, in which certain conclusions are justified. All the patients received large amounts of penicillin and antitetanic serum and were benefited by other well known therapeutic measures in the accepted treatment

TABLE 5.—Mortality Rate: Age Groups and Sex

	Number of Patients Aged 1-10		Number of Patients Aged 11-20		Number of Patients Aged 21-30		Number of Patients Aged 31-40		Number of Patients Aged 41-50		Number of Patients Aged 51-60		Number of Patients Aged 61-70	
	Deaths		Deaths		Deaths		Deaths		Deaths		Deaths		Deaths	
Male white.....	1	..	12	1	3	..	8	..	..	..	2	1	..	..
Female white.....	..	..	3	1	4	1	3	1	..	..	1	1	1	1
Male Negro.....	1	1	8	1	2	1	..	..	2	1	..	..	..	..
Female Negro.....	..	..	..	..	3	1	1	..	2	..	2	..	..	..
Total.....	2	50%	23	13%	12	25%	12	8.3%	4	25%	5	40%	1	100%

26.6 per cent and in the head 66.6 per cent. No portal of entry was discovered in 1 fatal case. Survival from postabortion tetanus is rare. One of our patients was treated with vaginal douches of hydrogen peroxide,

TABLE 6.—Time Between Onset of the Disease and the Appearance of Convulsions; Mortality Rate

Day	Number of Cases	Number of Deaths	Mortality Rate, Percentage
First.....	10	6	60
Second.....	6	3	50
Third.....	3	1	33.3
Fourth.....	3	..	..
Fifth.....	2	..	..
Sixth.....	1	..	..
Seventh.....	2	..	..
Eighth.....	3	..	..
Ninth.....	1	..	..
Thirteenth.....	1	..	..
Sixteenth.....	1	..	..
Twentieth.....	1	..	..
Total.....	35	10	28.5

with improvement, but the value of this procedure is questionable. In our second case oxygen was bubbled into the uterus, but this was to no avail (table 7).

Puncture wounds yielded a mortality rate of 11.8 per cent, chiggers 14.3 per cent, lacerations 20 per cent, abrasions 0 per cent, ulcerations 50 per cent, incised wounds 33.3 per cent, endometritis 50 per cent and hypodermic injections 50 per cent. As a rule the lesion looked inoffensive, and it appears that for that reason none of our patients received prophylactic inoculations after injury (table 8).

The actual cause of death was known in the 12 fatal cases. In 7, it was due to respiratory paralysis and overwhelming toxemia, in 4 to complicating broncho-

of the disease. There were patients of almost all ages, and there was a fair sampling as to sex and race. It being a planned study, precautions were taken that all patients were handled as similarly as possible and that the most exact information was obtained. Twelve patients died, yielding a gross mortality rate of 20.3 per cent. Of these, only 10 received adequate amounts of penicillin to guarantee full benefit, with a mortality rate of 17.6 per cent. Such a low mortality rate among a large group of cases of tetanus is difficult to explain, when in the best of institutions the mortality rate may be as high as 50 to 60 per cent. It may be suggested that Puerto Ricans are naturally resistant to the disease.

TABLE 7.—Portal of Entry; Mortality Rate

Portal of Entry	Number of Cases	Number of Deaths	Percentage of Deaths
Foot.....	24	3	12.5
Leg.....	6	1	12.5
Arm.....	7	1	14.3
Hand.....	7	2	28.6
Mouth.....	2	1	50.0
Anus.....	2	0	00.0
Uterus.....	2	1	50.0
Abdomen.....	2	0	00.0
Penis.....	1	1	100.0
Thigh.....	1	0	00.0
Cheek.....	1	1	100.0
Total.....	57	11	19.5

That this is not true has been demonstrated by Francisco,⁵ who reported a mortality rate of 58.1 per cent in a large group of natives of Puerto Rico receiving tetanus antitoxin as the only form of treatment for tetanus.

5. Francisco, R.: A Clinical and Epidemiological Study of Tetanus in Puerto Rico: A Study of One Hundred Cases Seen at the Arecibo District Charity Hospital in a 2½ Year Period, *Clinics* 3: 373-414, 1944.

There is abundant experimental proof to deny any favorable effects of large amounts of antitoxin in severe well established generalized tetanus. An analysis of our data shows that tetanus antitoxin not only is useless in relieving the convulsions but also failed to prevent the symptom in 12 of the patients hospitalized early in the course of the disease. On admission, these patients appeared only moderately ill, and the disease was labeled as mild tetanus. It seems that some time elapsed between the fixation of the toxin by the cells of the central nervous system and its diffusion to the neuromuscular end organ and that the quantity of toxin released was large enough to produce symptoms of such severity as to cause the death of 2 of these patients. This tends to demonstrate that judgment as to the outcome of tetanus is inexact when based on the presence or absence of convulsions and that in some cases the issue of life or death is not affected by the administration of antitoxin, no matter what the quantity or how early in the course of the disease it is given. It is emphasized that the mortality rate among the 12 patients in whom convulsions developed after hospitalization (16.6 per cent) approached that for the whole group (20.3 per cent).

TABLE 8.—*Nature of Lesion; Mortality Rate*

Type or Cause of Lesion	Number of Cases	Number of Deaths	Mortality, Percentage
Puncture.....	17	2 (feet)	11.8
Chiggers.....	7	1 (feet)	14.3
Lacerations.....	5	1 (arm)	20.0
Abrasions.....	5	..	00.0
Ulcerations.....	4	2 (leg) (penis)	50.0
Incised wound.....	3	1 (hand)	33.3
Abortions.....	2	1	50.0
Hypodermic injection...	2	1 (liver, arm)	50.0
Anal fissures.....	2	..	00.0
Curious tooth.....	1	1	100.0
Tooth extraction.....	1	..	00.0
Abscess.....	1	1 (cheek)	100.0
Burn.....	1	..	00.0
Contusion.....	1	..	....
Human bite.....	1	..	....
Surgical wound.....	1	..	....
Total.....	51	11	21.6

It appears that penicillin is useless in the prevention of the diffusion of the tetanus toxin through the tissues or its fixation by the nerve cells. By the same token, it does not relieve or prevent convulsions in already established tetanus.⁶ However, the favorable results obtained in this series of cases indicate that it is a valuable adjuvant in the treatment of the disease in combination with the other accepted measures. Penicillin has been shown to be an antibiotic for *Clostridium tetani* in vitro, and this property of the drug has been confirmed in vivo by Weinstein and Wesselhoeft,⁴ who noted the disappearance of the tetanus bacilli from the wounds of 2 patients twenty-four hours after the administration of the drug.

Perhaps the low mortality rate reported in this paper could be explained by this property of the drug, which by paralyzing the multiplication of *Clostridium tetani* reduced or prevented further production of toxin. The maintenance of a proper blood level of the drug may have been beneficial in preventing secondary bacterial infections. That it was efficient in curing bacterial complications incident to the disease is evidenced by the

recovery of 7 of our 11 patients suffering from bronchopneumonia. The failure of treatment with the drug in the fatal cases may have been due to a penicillin-resistant strain of bacteria, to small doses of the drug or to instances of aspiration pneumonia.

Definite conclusions as to the value of penicillin in tetanus must await more extensive studies in larger groups of cases. To deny its value on the basis of a high mortality rate among a small number of cases would perhaps be harmful, especially when the majority of the patients who died had not received the full benefit of the drug.⁷

It should be reemphasized that the most accurate prognostic signs of the disease are the length of the incubation period and the rapidity of appearance of muscle spasms after the onset of the disease and that, in spite of the favorable results reported in this paper, penicillin would be useless in the treatment of the disease if not used in conjunction with supportive measures for the maintenance of proper hydration and electrolytic balance, good nutrition, efficient sedation, neutralization of the free toxin with tetanus antiserum and proper debridement of the portals of entry if accessible.

SUMMARY AND CONCLUSIONS

On the basis of our observations of 59 patients with tetanus, we conclude that penicillin is a useful adjuvant in the treatment of the disease. The gross mortality rate was 20.3 per cent; the mortality rate among those patients that received a fair trial with penicillin being 17.6 per cent.

The favorable action of the drug may be attributed to its antibiotic property against the tetanus bacillus, that, by hindering its growth and multiplication, eliminated or paralyzed the production of the toxin.

Penicillin may also act as an antibiotic for other bacteria, preventing or curing already established complications, such as bronchopneumonia.

Penicillin is considered useless in the prevention of convulsions and in the elimination of the free toxin in the body or the already fixed toxin in the cells of the central nervous system.

The administration of large amounts of antitoxin is recommended to neutralize the toxin that is free in the body or being produced by *Clostridium tetani*.

The antitoxin is useless in preventing the onset of or in eliminating the convulsions of tetanus when present.

It appears from the analysis of the data of 12 of our patients that some time elapses between the fixation of the tetanus toxin by the nerve cells and its diffusion to the tissues resulting in convulsions.

The presence of convulsions in tetanus is not a measure of its severity, and the formulation of a good prognosis in the absence of this symptom may be erroneous.

Debridement of infected wounds, maintenance of proper hydration and electrolyte balance, good nutrition and sedation are considered as important as the administration of antitoxin or penicillin in the treatment of tetanus.

It is reemphasized that the mortality rate in tetanus is higher in the cases with short incubation period and rapid onset of convulsions.

The early recognition of the disease and the rapid institution of treatment with all available measures may have been contributory to the low mortality rate reported in this paper.

322 de Diego Avenue.

6. Neter, E.: Effects of Penicillin, Claracin and Streptomycin upon Tetanus Toxin, *J. Infect. Dis.* 76: 20-23, 1945.

7. Altmeier, W. A.: Penicillin in Tetanus, *J. A. M. A.* 130: 67-72 (Jan. 12) 1946.

Special Article

CARCINOMA OF THE BREAST

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This article is the fifteenth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment.

Cancer of the breast is one of the great diseases with which physicians have struggled since time immemorial. For the modern physician, however, cancer of the breast is a greater challenge than it was to his colleagues of even a generation ago, because today there are improved diagnostic methods that often make it possible to recognize the disease while it is still early, and there are new therapeutic methods that give better control over it. Unfortunately, this new knowledge has not as yet been fully digested and applied. There is a long way to go in the education of both the medical profession and the public. In a recent series of cases coming to the

ORDER OF INCIDENCE	SITE	SEX	ANNUAL INCIDENCE
1	BREAST	FEMALE	80.0
2	CERVIX UTERI	FEMALE	34.3
3	SKIN	MALE	29.2
4	STOMACH	MALE	27.1
5	COLON	FEMALE	24.4
6	PROSTATE	MALE	23.2
7	SKIN	FEMALE	19.8
8	COLON	MALE	19.6
9	STOMACH	FEMALE	17.6
10	RECTUM&RECTOSIGMOID	MALE	15.2
11	LUNG	MALE	14.7
12	OVARY	FEMALE	12.2
13	RECTUM&RECTOSIGMOID	FEMALE	12.1
14	FUNDUS UTERI	FEMALE	11.9
15	BLADDER	MALE	11.5
16	LIP	MALE	6.8
17	LEUKEMIA	MALE	6.3
18	PANCREAS	MALE	5.7
19	LIVER	FEMALE	5.5
20	BLADDER	FEMALE	5.2

ALL SITES FEMALE - 270.8

ALL SITES MALE - 231.8

Fig. 1.—Annual incidence of cancer per hundred thousand population, New York state exclusive of New York City, 1942, 1943 and 1944.

Presbyterian Hospital in which a careful study of the manner of diagnosis was made, it was found that wrong medical advice had been given to 27 per cent of the patients by the first physician whom they consulted. Surely here is an opportunity for better education of physicians.

The patients themselves must, of course, bear a measure of responsibility for delay. Many women delay consulting a physician for a long time after they discover that they have a tumor of the breast: ignorance, negligence and fear all play a part in this delay.

I believe that women should be educated in college hygiene courses, and by every other available method of propaganda, to examine their own breasts once a month, in the middle of the menstrual cycle when mammary engorgement is at a minimum. They should be taught to consult a physician promptly whenever they feel a lump or whenever discharge from the nipple or any asymmetry of the breast is discovered.

From the Department of Surgery and the Laboratory of Surgical Pathology of the School of Medicine of Columbia University.

THE PROBLEM OF DIAGNOSIS

FREQUENCY OF CANCER OF THE BREAST

The first step toward better diagnosis of cancer of the breast is a full realization of its frequency. According to Levin's¹ recent morbidity data for New York state the breast is by far the most frequent site for cancer in either sex (fig. 1). In women it is almost

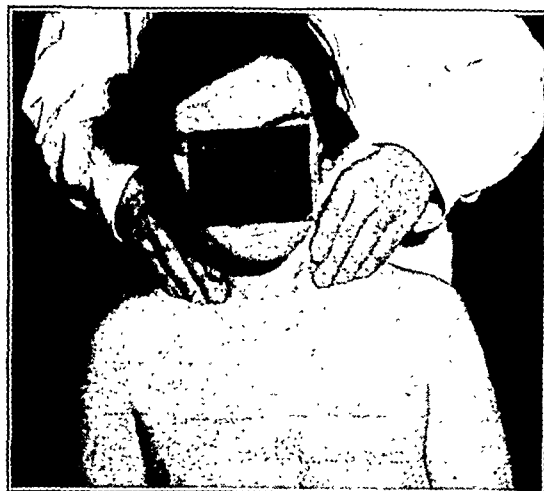


Fig. 2.—Palpation of the supraclavicular regions.

twice as frequent as any other type of cancer. About 4 per cent of all adult women contract the disease. It is rare before the age of 25, but from then on its incidence increases throughout the whole life span.

These facts should produce in the mind of every physician an alert suspicion of the presence of cancer of the breast whenever anything abnormal is seen or felt in the course of examination of the breasts. Their examination is an important part of every physical examination. The value of careful routine examination of the breasts has been well established in our clinic, where 3.4 per cent of the total number of cancers of the

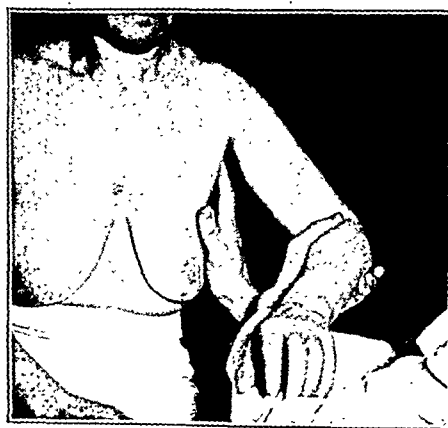


Fig. 3.—Palpation of the axilla.

breast were detected by such routine examination of patients who came to consult regarding some wholly irrelevant symptom.

EXAMINATION OF THE BREAST

A good deal of the success with which early cancer of the breast is detected depends on the care taken in

1. Levin, M. L.: Cancer Morbidity in New York State, personal communication to the author.

the examination of the breasts. The examiner must study the breasts as a separate step in his complete physical examination. If he merely passes his hand over his patient's breasts while she sits erect, as he prepares to examine her heart and lungs, he will often miss lesions of the breasts. An adequate examination

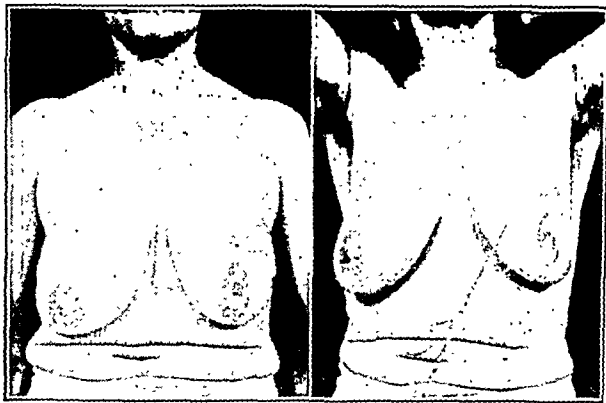


Fig. 4.—Inspection of the breasts with the arms at the sides and with the arms raised.

is a well ordered procedure including several different steps and requiring ten or fifteen minutes even when no abnormality is found. When the examiner finds something that arouses his suspicion that the breast may be diseased still other maneuvers are required.

I have found it advantageous to develop a routine for examining the breasts because following an orderly routine guards against overlooking important details.

The procedure begins with examination of the supraclavicular and axillary regions. The patient sits on the table facing the examiner, with her legs over its side. The supraclavicular regions are conveniently palpated as the examiner stands behind the patient (fig. 2). In the examination of the axilla (fig. 3) it is essential that the pectoral muscles be relaxed. To achieve this the examiner supports the patient's arm on one of his



Fig. 5.—Palpation of the breast. The patient lies supine with a small pillow under her shoulder on the side being examined.

own. He then palpates with the tips of the fingers of his other hand. The more gentle his palpation the better he will feel lymph nodes lying against the thoracic wall. Lymph nodes high up in the axilla are difficult or impossible to feel. In obese patients palpation of the axilla is particularly unreliable.

Not only the number, but the consistence and mobility of the axillary lymph nodes should be noted.

They may be fixed to the underlying chest wall or the overlying skin. My colleagues and I have found it useful to attempt to measure the size of the largest axillary node, estimating transverse diameter in centimeters.

Palpation is unfortunately very inaccurate in determining whether axillary lymph nodes contain metastases. In the Presbyterian Hospital series of cases in which the examiner thought these nodes not to be involved 44 per cent were found by microscopic examination to contain metastases. On the other hand, in the cases in which the examiner made a clinical diagnosis of axillary metastases, 15 per cent of the patients proved not to have them.

The next step in our routine is a critical inspection of the breasts themselves, first with the patient's arms at her sides and then with the arms raised high above her head (fig. 4). The examination must be conducted in a good light, for nuances of light and shade and slight changes in contour of the breasts are of great importance and may be missed if the lighting is poor. The examiner compares the contour of the two breasts,

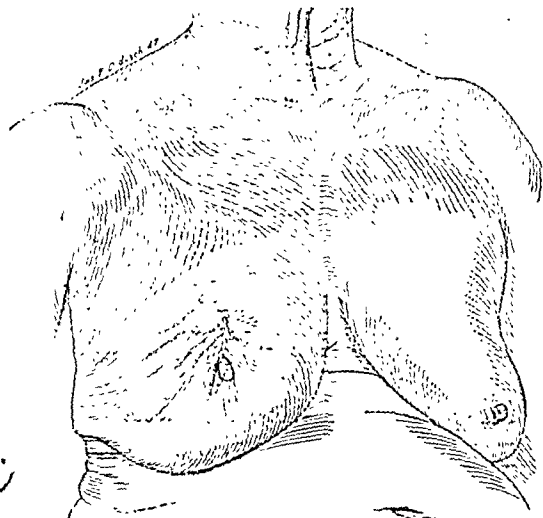


Fig. 6.—Carcinoma of the upper central part of the breast with pronounced retraction signs. Note the deep dimple over the carcinoma, the contraction of the areola and the pulling up of the nipple toward the lesion.

following it from the anterior axillary fold to the midline on each side. An indentation or a bulge in this contour often betrays the site of a lesion. He compares the height of each breast on the chest wall and their relative size.

The shrunken breast of advanced slowly growing carcinoma, or the generally enlarged edematous breast of acute carcinoma are at once obvious, but the subtle changes due to earlier lesions are not so evident.

It will sometimes be noted that one breast is slightly larger than the other, yet perfectly symmetric with its mate. This mere disparity in size is often only a developmental defect, and if not accompanied by other signs is no cause for alarm.

The shape and size of the areolas and their comparative level are next studied. The shape of the nipples and the axes in which they point are compared. The surface of the nipples is carefully inspected in a search for crusting or erosion.

Inspection completed, the examiner is ready for palpation of the breasts. This is best performed with the patient lying down (fig. 5). For adequate palpation the breast should be balanced on the chest wall, forming an even layer spread out over the thoracic cage. To achieve this we elevate the chest on the side of the breast being examined by placing a small pillow under

the shoulder. If the breast is allowed to fall to the patient's side, folding on itself, the examiner may mistake its folds for abnormalities.

The whole extent of the breast is now gone over with the tips of the fingers. It should be kept in mind that the breast tissue often extends over a wide area. A thin layer of it may reach the midline of the sternum medially, the lower edge of the clavicle above and the edge of the latissimus dorsi muscle laterally. Small subcutaneous tumors near these outer limits of the breast may be mistaken for benign subcutaneous lesions not associated with the breast when in fact they are carcinomas of the breast. The axillary prolongation of the breast extends high into the axilla in some subjects, and carcinoma arising in it is commonly mistaken for lymphosarcoma or adenitis of the axillary lymph nodes.

In palpating the breast a little talcum powder on the skin diminishes friction and may add to the accuracy

It has been our experience that careful palpation of the breast, carried out according to this plan, will reveal a carcinoma of the breast even when it measures only 4 or 5 mm. in diameter. The hardness of the tumor and its relative fixation in the area of breast tissue in



Fig. 7.—Carcinoma of the upper outer sector of the breast. Note the broad dimple over the carcinoma and the pulling up of the nipple toward it.

of tactile perception of the consistence of breast tissue. Gentle palpation is not only more informative than rough examination; it is a necessary precaution against the hazard of causing metastasis. We try to emphasize this danger by sharply limiting the examination of women with carcinoma of the breast by students on our wards.

Although palpation in the supine position is certainly the best method of detecting abnormalities in most parts of the breast, there is one area which it is wise also to palpate between the fingers of both hands with the patient sitting up. This is the subareolar and nipple region. In this central area where the ducts converge to enter the base of the nipple the breast structure is looser and less dense. In breasts which are thick and relatively firm in texture, the comparatively dense breast tissue forms a sort of ledge around the softer subareolar region. The cephalad portion of this ledge is not infrequently mistaken for a tumor. On the other hand, a real tumor of small size situated in the softer subareolar area may be almost impalpable in the supine position, although when examined between the fingers with the breast dependent the tumor is readily felt.

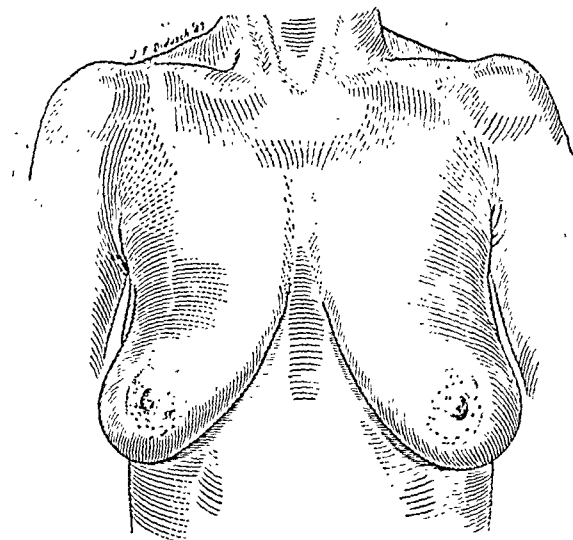


Fig. 8.—Carcinoma of the lower inner sector of the right breast. With arms at the sides no asymmetry is seen.

which it lies, making it impossible to move it without carrying along the surrounding breast tissue, are the features which most often suggest that it is a carcinoma. Most carcinomas are not sharply circumscribed; the edge of the lesion merges with the surrounding breast tissue which it infiltrates. This makes a carcinoma difficult to measure precisely.

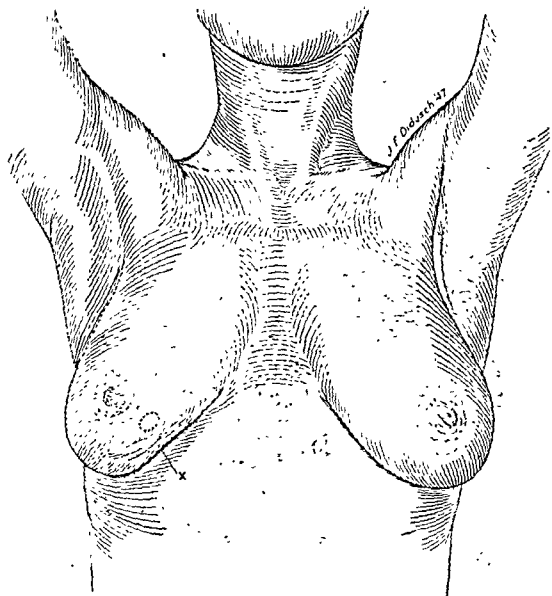


Fig. 9.—Carcinoma of the lower inner sector of the right breast. With arms raised an indentation is seen at X.

But consistence and mobility and circumscription are by no means reliable indications of the nature of a tumor of the breast. Papillary carcinomas and colloid carcinomas may be soft, while a calcified fibroadenoma may be as hard as stone. There is a type of strikingly well circumscribed carcinoma which we call in our laboratory the *solid circumscribed type*, which may strongly suggest a cyst or a fibroadenoma. On the other

A maneuver which is often helpful in demonstrating retraction signs in a carcinomatous breast is that of pectoral contraction. While in the sitting position the patient relaxes and rests her hands on her hips, giving the examiner an opportunity to compare the relative

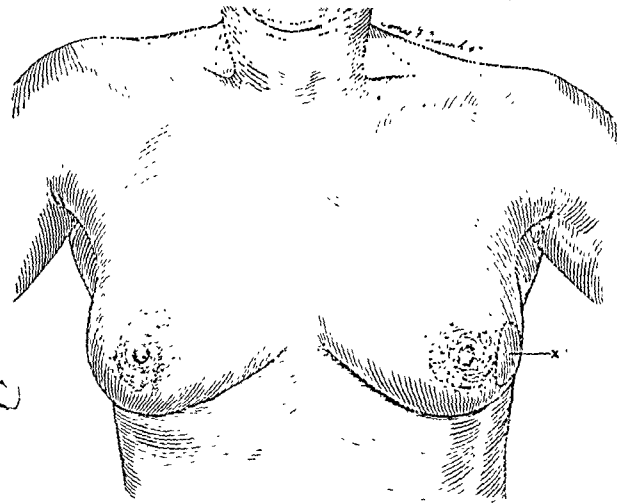


Fig. 18.—Carcinoma of the outer part of the left breast. Breasts symmetrical in erect position.

heights of the lower edge of the breast and the level of the areola on each side, and to look for retraction signs over the tumor. The patient is then asked to press her hand against her hip, contracting her pectoral muscles, first on the normal and then on the diseased side. The normal breast is pulled upward slightly by this action, but the carcinomatous breast often rises sharply as compared with its mate. The breast as a whole may be abnormally elevated, or merely the sector of the breast in which the carcinoma is situated. This abnormal elevation occurs, of course, because the fibrosis in the carcinomatous area ties it down to the underlying pectoral fascia. When contraction of the pectoralis major elevates the pectoral fascia the carcinomatous area in the breast is pulled up with it. This is a *relative*, not a *solid*, fixation, as when carcinoma in a more advanced stage becomes immobile on the chest wall.

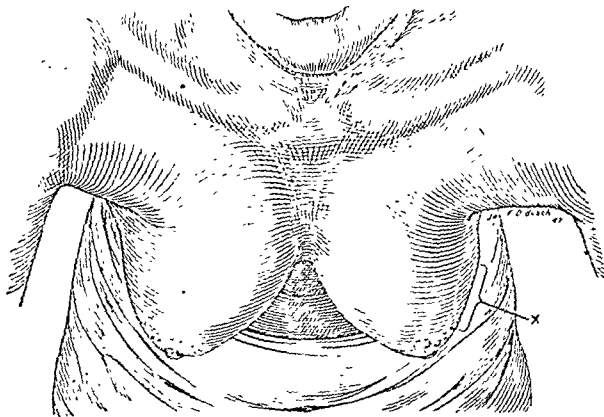


Fig. 19.—Carcinoma of the outer part of the left breast. In forward bending position there is flattening of the lateral contour of the breast at X.

When the carcinoma is solidly fixed, pressing the hand against the hip of course produces no elevation of the breast at all.

Pectoral contraction also brings out other retraction signs—deviation of the nipple toward the carcinoma, and lines and dimples in the skin over it. Figures 13 and 14 demonstrate this pectoral contraction maneuver

in a patient with carcinoma in the outer upper part of the breast. Figure 13 shows the patient with her arm relaxed: no definite dimpling is seen in the skin adjacent to the carcinoma indicated by the circle. But when her arm is pressed against her side in figure 14 a whole series of lines and furrows appear in the skin.

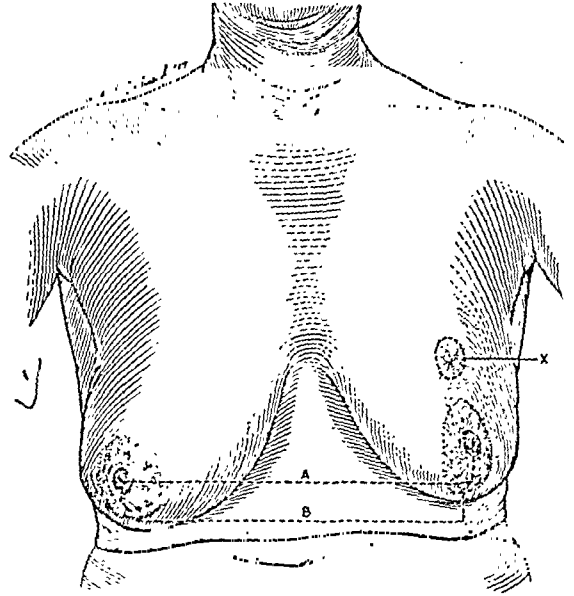


Fig. 20.—Carcinoma of the upper central part of the left breast. Left areola and nipple elevated.

Another method of demonstrating the presence of a relative degree of fixation of the carcinomatous area in the breast to the pectoral fascia is to test the lateral

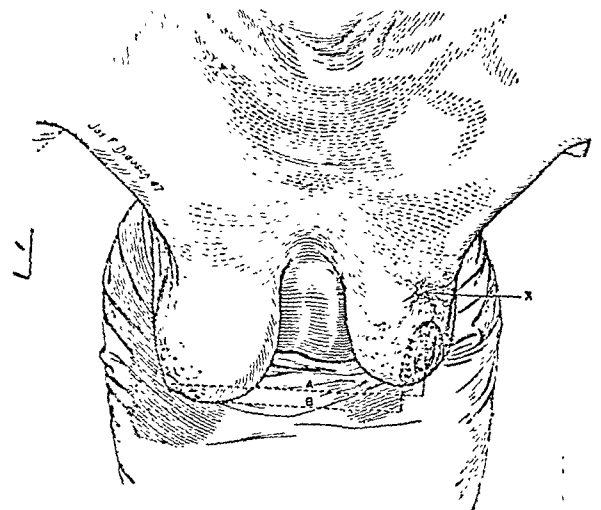


Fig. 21.—Carcinoma of the upper central part of the left breast. The elevation of the areola and the nipple, and the breast as a whole, are accentuated by forward bending.

mobility of the breast while the patient lies supine, as shown in figure 15. In the gentlest possible manner the sector of the breast containing the tumor is moved transversely across the chest wall between the fingers of the examiner's two hands, first with the arm relaxed, and then with the arm pressed against the hip to contract the pectoral muscles. In patients in whom the diseased area is relatively fixed by fibrosis to the underlying pectoral fascia the breast can be moved freely while the arm is relaxed, but motion is sharply checked when the pectoral muscles are contracted.

Another procedure of great value in demonstrating retraction signs in the breast is the forward bending

maneuver. I learned of it from the late Hugh Auchincloss, who used it with striking effect. The patient is asked to bend far forward from the hips, keeping her chin up and extending her hands forward to the examiner who supports them as he sits before her. In this

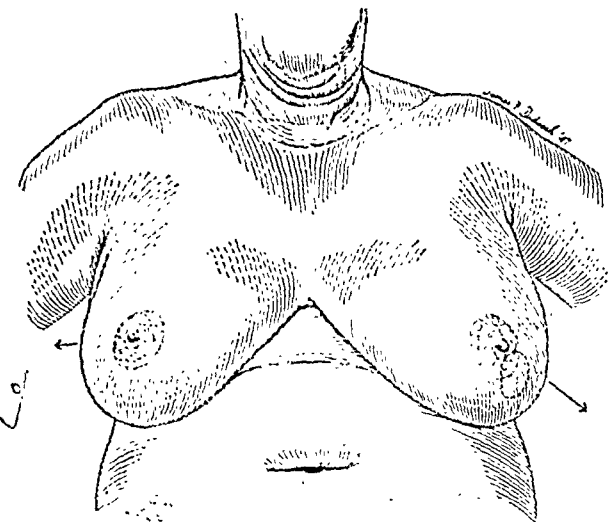


Fig. 22.—Deviation of the axis of the left nipple downward and outward toward a carcinoma in the lower outer sector of the breast.

position normal breasts fall freely away from the chest wall and are perfectly symmetrical. But if a carcinoma is present in one of them, even though the growth be small, the fibrosis which accompanies it will usually fix in some degree the diseased breast to the chest wall and produce an asymmetry which careful inspection from the side or from the front will detect. Over and over again we have seen carcinoma in the breast betrayed by asymmetry demonstrated by this maneuver, although there were no other retraction signs. Figures 16 and 17 show a good example of the value of forward bending. There was a small firm carcinoma beneath the areola as indicated by the circle, but no asymmetry was evident as the patient sat with her arms at her sides.

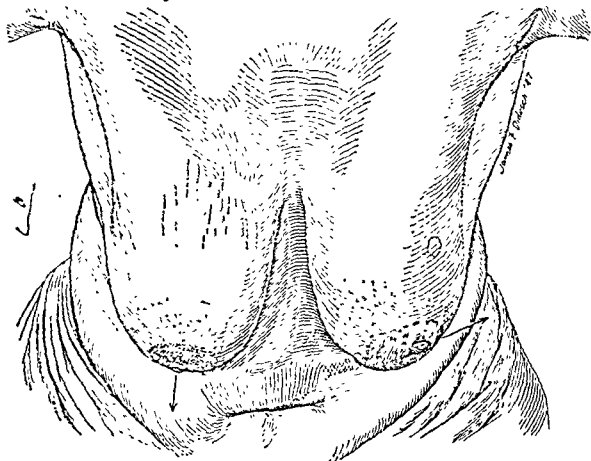


Fig. 23.—Deviation of the axis of the left nipple upward and outward toward a carcinoma in the upper outer sector of the breast, accentuated by forward bending.

When she bent forward, however, the nipple and medial part of the areola were pulled deeply up into the breast. No observer would miss this distortion.

The change in the contour of the breast which carcinoma produces is much less apparent in some cases. The patient shown in figures 18 and 19 illustrates this fact. Here forward bending revealed only a slight

flattening of the lateral contour of the left breast in the area marked X adjacent to the carcinoma indicated by the circle. There was no dimple in the skin over this lesion.

In his search for retraction signs the examiner should pay special attention to changes in the areola and nipple. The horizontal level of the areola and nipple is often elevated by a carcinoma in the upper half of the breast. The areola may be narrowed and distorted so that it points toward the carcinoma. All these changes are illustrated in figure 20. They were accentuated when the patient bent forward as shown in figure 21.

Deviation of the axis in which the nipple points is a subtle variety of retraction sign. The fibrosis in and about the carcinoma pulls on the duct system and tilts the nipple so that it points toward the carcinoma. Figure 22 shows deviation of the axis of the left nipple downward toward the carcinoma indicated by the circle in the lower breast. Figure 23 shows upward deviation

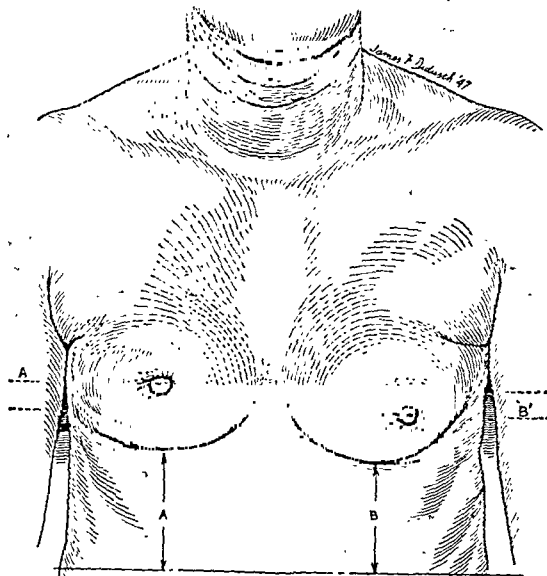


Fig. 24.—Flattening and broadening of the right nipple due to a carcinoma in the central part of the breast.

of the left nipple toward a carcinoma indicated by a circle in the upper part of the breast. In this figure the deviation is accentuated by forward bending.

When the carcinoma involves the area more or less directly beneath the nipple the fibrosis shortens the whole duct system and pulls the nipple inward. This process may show itself merely as flattening and broadening of the nipple (fig. 24) on the carcinomatous side as compared with its mate. The nipple loses its elasticity and cannot be pulled out like the uninvolved one. As the fibrosis progresses the nipple becomes flatter and broader until, in some instances, it finally retracts beneath the surface of the surrounding areola (fig. 25).

Flattening or retraction of the nipple due to carcinoma should not be confused with mere inversion of the nipple, a condition seen in a good many women with no disease of the breast. Inversion of the nipple may be bilateral or unilateral. The patient will usually say that the inversion has been present for many years and that it interfered with nursing. Instead of protruding in the normal way the inverted nipple has the appearance of a sulcus, into the bottom of which the ducts open. Inverted nipples can often be pulled out. They are not broadened and thickened and fixed, like the retracted nipple of carcinoma.

The fibrosis following an abscess sometimes distorts the nipple, changing its axis or inverting it. The history and the presence of a scar should enable the examiner to interpret such changes correctly.

The carcinomas of the breast in which a careful examination fails to reveal any of the retraction signs described are few indeed. In my experience these few have been either the solid circumscribed type or well differentiated types. Both of these varieties seem on occasion to produce less fibrosis in the surrounding breast than most carcinomas, and therefore less retraction.

Erosion.—Erosion of the surface of the nipple is an important sign of carcinoma. Even when it is only 2 or 3 mm. in diameter it warrants a presumptive diag-

is flattened and finally destroyed by the process, which extends onto the areola and then over the skin of the breast. This type of carcinoma is relatively somewhat less malignant than other forms of carcinoma of the breast, and cure may be achieved even when the erosion

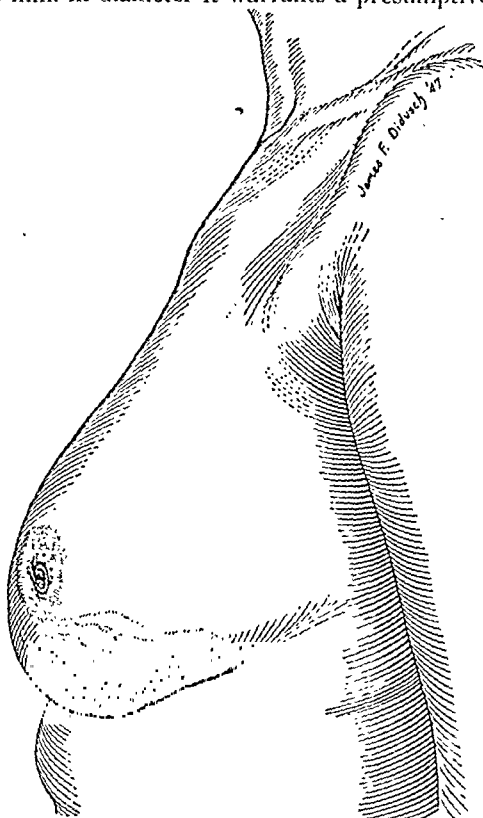


Fig. 25.—Side view of the left nipple showing it retracted below the level of the areola due to a central carcinoma of the breast.

nosis of the Paget type of carcinoma. Modern histologic studies have shown that what Sir James Paget thought was a "disease of the mammary areola preceding cancer of the mammary gland" is in fact actual involvement of the nipple epidermis by carcinoma cells. In Paget's erosion of the nipple meticulous microscopic search of the breast will always reveal somewhere in it a primary carcinoma whose cells have grown along the ducts to reach the surface of the nipple. These so-called Paget cells have a peculiar predisposition to grow only within the epidermis (fig. 26). Not all erosions of the nipple, of course, are carcinomatous, for inflammatory and trophic eczema-like lesions do occasionally develop in the nipple and areola. But the percentage of nipple erosions that are carcinomatous is so high that biopsy of the lesion and microscopic proof of its nature are always necessary. The typical Paget erosion is a crusted or moist and granular area on the surface of the nipple (fig. 27). It dries up and seems to heal over from time to time but soon breaks open again, enlarging slowly but steadily. The nipple

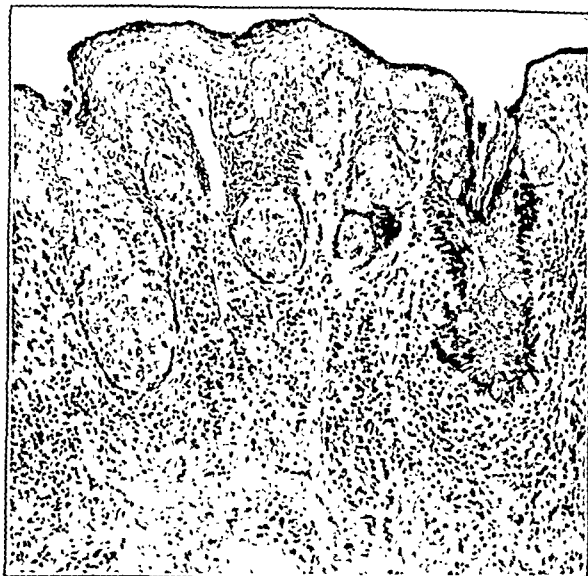


Fig. 26.—Paget carcinoma cells in the epidermis of the nipple.

has been present for years and has involved a large area of the skin over the breast, as in the patient shown in figure 28.

Discharge.—A discharge from the nipple is, of course, a sign of abnormality in the breast. This may be physiologic and harmless, or pathologic and an indication of inflammation or of epithelial proliferation. The character of the discharge is an important distinguishing feature.



Fig. 27.—Paget's erosion of the nipple—an early lesion.

A discharge which has the consistency and color of milk is usually just that. Occasional women continue to secrete a small amount of milk for months, and in rare cases for years, after lactation would normally have ceased. We do not yet have enough understanding

of the hormonal control of lactation to know the physiologic mechanism in these cases. This kind of nipple secretion is usually bilateral. The few drops of milk that accumulate in the duct system of such a breast do not usually escape spontaneously but appear only when the breast is squeezed or the nipple is stimulated. Such a discharge from the nipple is harmless.

Low grade inflammatory processes, developing in the subareolar portion of the breast close to the larger ducts, sometimes break into a duct which provides a channel for the escape of secretion. This type of inflammatory discharge has the gross character of pus, and its nature can be confirmed by making a smear of it and examining it microscopically. Although recurring or persisting infection in the breast is notoriously difficult to eradicate, perhaps because of the poor blood supply and fatty character of the breast tissue, attempts to provide adequate surgical drainage should be made in these cases. When the abscess cavity is opened it is wise to excise a small piece of tissue for microscopic examination, to rule out the possibility of unsuspected carcinoma.

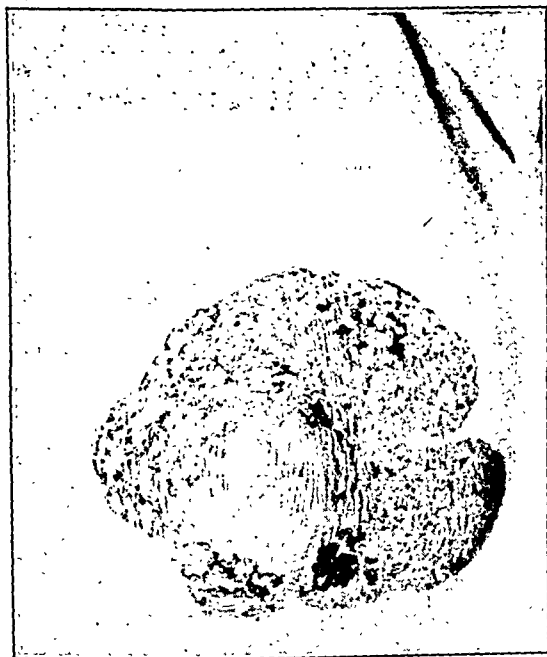


Fig. 28.—Extensive Paget's disease with destruction of the nipple.

A thin, yellowish, brownish, reddish or frankly bloody discharge from the nipple is almost always a sign of epithelial proliferation. This kind of discharge usually escapes spontaneously and stains the patient's brassière. In the great majority of cases it is due to an intraductal papilloma growing in one of the larger ducts in the subareolar region, and not to carcinoma. The dilated duct containing the papilloma can usually be detected by careful palpation as a small cordlike or rounded tumor beneath or close to the areola. Pressure on it produces a drop or two of secretion from the opening of the involved duct on the surface of the nipple. Such a lesion should always be explored surgically, and the diseased duct or ducts excised. Microscopic examination will confirm the benign nature of the papilloma and rule out carcinoma.

If the papillary process is situated some distance out in the breast tissue away from the subareolar region,

or if it has grown to form a tumor of considerable size, it is wise to make a biopsy of the lesion before attempting to remove it, because such growths are often papillary carcinomas.

If, in a patient with a history of a yellowish, brownish or bloody discharge from the nipple, careful palpation



Fig. 29.—Infra-red photograph to show dilated subcutaneous veins in carcinoma of the left breast.

does not reveal any tumor or any point where pressure elicits the discharge, the surgeon should reexamine the breast after a few days, cautioning the patient against squeezing the breast in the meantime. During this interval the secretion will have an opportunity to accumulate in the diseased duct, and reexamination may localize it.

When examination still fails to reveal the source of the discharge, the subareolar and central area of the breast should be explored surgically. Although difficult for the surgeon, such an exploration is justified



Fig. 30.—Extensive edema of the skin in carcinoma of the breast.

because this type of discharge from the nipple is in a small percentage of cases a sign of carcinoma.

Only about 5 per cent of carcinomas of the breast are, in fact, accompanied by a discharge from the nipple. In most of these patients there is also a palpable tumor which has the clinical characteristics of a carcinoma.

The discharge is more often frankly bloody than yellowish or brownish. Even though it is infrequently the only sign of carcinoma, such a discharge from the nipple should never be dismissed lightly. Its cause must be searched for and its nature proved.

Abnormal Circulatory Relationships.—Retraction signs are not, of course, the only clinical signs produced by carcinomas of the breast. There is a group of

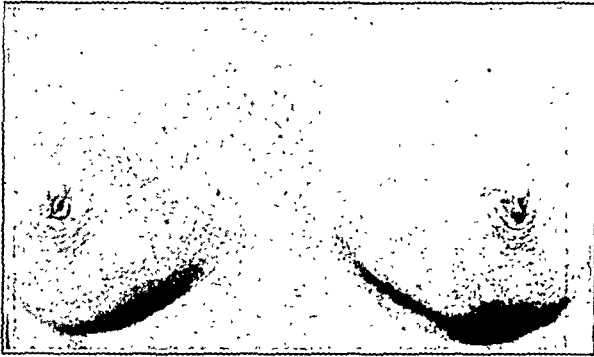


Fig. 31.—Edema limited to the skin of the areolar region in carcinoma of the right breast.

clinical signs produced by abnormal circulatory relationships in the breast. Carcinoma growing in the breast causes an increase in the blood supply to the part. This not infrequently produces hyperemia of the skin, which is abnormally warm and sometimes reddened. The subcutaneous veins over the upper part of the breast may be visibly dilated. Infra-red photographs bring out this dilatation in a striking manner (fig. 29). At operation the internal mammary vessels (the chief blood supply to the breast) at the intercostal level corresponding to the carcinoma will often be seen to be abnormally large. It may be argued that prominence of subcutaneous and intercostal veins might be due to venous obstruction, but we have repeatedly seen it in cases in which there was no evidence at all of obstruction of the axillary vein.

Edema of the skin of the breast due to blocking of the subdermal lymphatics is an important sign of carcinoma in an advanced stage. Lymph accumulates within the skin until it is several times its normal thickness, and causes abnormal separation and deepening of the orifices of the cutaneous glands (fig. 30).

When the area of edema is small, as in the case shown in figure 31, it easily escapes detection unless carefully looked for. It usually begins as in this patient, in the skin within the areola, or just caudad to it; that is, in the most dependent part of the breast. This is regularly the site where edema appears when the carcinoma is situated deep in the center of the breast, but it may also be the earliest location of edema when the carcinoma is situated in the periphery of the breast. We have seen edema appear just below and medial to the nipple when the carcinoma was a small one located in the extreme upper outer part of the breast.

This tendency of edema to develop in the areolar region is probably due to the fact that carcinoma of the breast tends to spread, in its late stages, in a retrograde fashion along the main lymphatic pathways. These radiate from the areolar region.

There are, of course, other cases in which the edema first appears in the skin immediately over a carcinoma situated more peripherally in the breast. In such cases the skin is usually somewhat adherent to the underlying tumor, and it seems probable that the lymphatics of

the skin are obstructed by direct retrograde invasion from the surface of the growth outward.

We have been much interested in the mechanism by which edema of the skin is produced, and we have made a special effort over a period of years to study the skin histologically in these cases. In interpreting the findings the first requisite, of course, is an appreciation of the normal arrangement of the lymphatics in the skin. There are no lymphatics in the epidermis itself. In the corium, however, there are two networks of them, a narrow-meshed superficial subdermal one which sends branches up around the papillae, and a wide-meshed deeper one made up of broader channels equipped with valves which communicate by means of vertical branches with the subdermal lymphatics. Our histologic studies of edematous skin have led us to the conclusion that the process begins with the appearance of embolic masses of carcinoma cells in the deep network of lymphatics in the corium. We believe that the mechanism by which extension takes place is at first embolic, rather than one of continuous permeation, because we have often seen the picture illustrated in figures 32 and 33. Here, in edematous skin, the deeper lymphatics are dilated and contain unmistakable tumor emboli. As the edema progresses both the superficial and deep lymphatic vessels become solidly choked with tumor cells, and at this advanced stage of the process permeation is probably the predominant mechanism by which the disease extends.

These signs of disturbed circulation in the breast are, of course, also seen in infections in the breast, both



Fig. 32.—Photomicrograph of edematous skin in carcinoma of the breast, showing carcinoma emboli in dilated subdermal lymphatics.

in acute abscesses and in low grade chronic infections. They are not as distinctive of carcinoma as the retraction signs. Both classes of signs, moreover, may be produced by entirely benign lesions.

Transillumination.—Transillumination of the breast has been emphasized by some clinicians, but we have found it to be of such limited usefulness that we do

not employ it routinely. A papillary cystadenoma containing bloody fluid, situated in the subareolar area of a dependent breast, will show up well in transillumination as a sharply circumscribed entirely opaque shadow. But even when it gives this picture transillumination does not rule out carcinoma and further diagnostic steps are necessary.

Röntgen Examination.—Examination of the breast by roentgen rays to show changes in soft tissue density is not, in our opinion, of any definite value, and we do not employ it. The injection of the ducts of the breasts with an opaque medium for roentgen study seems to us a dangerous procedure. The ducts may contain carcinoma, and injection may distend and rupture them and force carcinoma cells into veins and lymphatics.

All of the refinements of clinical diagnosis which I have described may, of course, be said to be of academic importance, because one cannot lay down absolute rules regarding the diagnostic significance of even the most



Fig. 33.—Higher power view of dilated subdermal lymphatic vessel containing carcinoma emboli.

reliable clinical signs. The surgeon who performs a radical mastectomy must be absolutely certain of his diagnosis, and clinical signs give such security only when they are well developed and when they are interpreted with an extensive background of experience. In most cases the surgeon will wish to rely on the microscopic proof of the presence of carcinoma, for he knows that there are a whole series of benign lesions of the breast which simulate carcinoma more or less closely. A low grade abscess, traumatic fat necrosis, a cyst whose contents have in part escaped into the surrounding breast tissue and set up an inflammatory reaction, adenosis, myoblastoma—any of these may form a hard tumor in the breast with dimpling of the overlying skin. The surgeon's dilemma is a difficult one. He must have proof of the nature of the lesion with which he is dealing, for his whole plan of treatment hinges on this one fact. The benign lesions require only simple local excision, while carcinoma demands a formidable and mutilating operation which must never be done needlessly.

(To be continued)

Clinical Notes, Suggestions and New Instruments

HAZARDS OF CURARE

Presentation of a Case

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With the increase in the various "shock therapies," both in institutions and in the private offices of the nation's psychiatrists, there is bound to be an increase in the absolute number of fractures, pulmonary abscesses and deaths, as well as other complications. The literature is replete with case studies of patients with varied diagnoses who have shown adequate and early response to shock therapy. With the improvement of technique and the institution of electroconvulsive treatments have come refinements in procedure which, on the whole, have tended to ameliorate the complications and to increase the number of patients who are being treated. Electroconvulsive therapy has almost completely supplanted the use of "metrazol" N. N. R. (pentamethylenetetrazol) and is tending more and more to supplant insulin therapy. Patients with the depressions and other affective disorders who respond to "metrazol" therapy respond more quickly and with greater ease to the electrical form of convulsive stimulation. More patients can be treated at the same time, and the safety factor is much greater. No longer does one see the severe fractures previously noted with "metrazol" therapy, nor is it as difficult to gage the amount of electrical potential necessary as it was to gage the amount of chemical to be injected. Few therapists are willing to expose their patients to the greater dangers and the lesser certainty of "metrazol" therapy, when they have at hand the simple, less costly and safer procedure which is possible with the electroshock machine. Although the delusional patient does not respond too well to electroconvulsive therapy, his response seems to be equal to the response to insulin therapy, so that again electroconvulsive therapy is the method of choice.

Fractures still form the basis for the greatest fear in the mind of the therapist, and in order to obviate these he has resorted to manual, instead of mechanical, restraint and hyperextension of the dorsolumbar aspect of the spine. These improvements are still too inadequate to prevent fractures completely in certain patients, e.g., muscular men. In addition, there are those patients whose mental condition is sufficiently severe to warrant convulsive therapy but who have bony changes which increase the chances for fracture. Many attempts have been made to lessen the severity of the convulsion among these persons. They have been sedated or have been completely narcotized with preliminary barbiturate medication by either the oral or intravenous route. Various other anticonvulsants have been utilized, none of which proved adequately effective except curare.

With the introduction of treatment with curare, many patients, who otherwise could not be treated because of fear in the mind of the therapist that fractures might ensue, have been accepted for convulsive therapy, with results which justify the use of this added hazard. Some patients have had treatment continued despite vertebral fractures if the psychiatric prognosis justified continued treatment. The usual procedure is to fix the area involved in a cast and to give an injection with curare prior to the advent of further convulsions. Here, too, the results have been favorable and have justified this comparatively radical procedure. The patients, on improvement or recovery from their mental illness, have usually been asymptomatic regarding the injury to the spine.

Read at the Down-State Psychiatric Meeting of the New York State Department of Mental Hygiene, New York State Psychiatric Institute, April 21, 1948.

REPORT OF A CASE

The following report is of a 25 year old white woman with a diagnosis of dementia praecox, catatonic type, who, because of a right femoral hernia which increased in size with each convulsion, was given curare medication. Although she had been mentally sick for a year and a half prior to treatment, the results of three electrically induced grand mal seizures were sufficiently promising to warrant continued treatment despite the additional hazard occasioned by curare medication. Unfortunately, the patient's reaction to curare was poor, and it was felt that her death, following the ninth treatment, was precipitated by treatment with this drug. The preparation used was a product of E. R. Squibb & Sons, "intocostrin"—curare in aqueous diluent—with a standard concentration.

S. A., the daughter of a shy withdrawn father and an aggressive domineering mother, whose family history revealed no evidence of nervous or mental disease, was admitted to the Rockland State Hospital on Feb. 14, 1946, because she would sit motionless, staring fixedly. She paid no attention to questions asked, but at times would giggle inappropriately. She was subject to delusions and hallucinations and showed apparent defects of insight and judgment. She had recently been discharged from another psychiatric hospital, where she had remained for ten months and had received some electroconvulsive therapy and some insulin therapy, with improvement, which was, however, not maintained. She was discharged from this previous institution in December 1945, with her condition noted as "unimproved." For a period of three months she was kept at home, but, because of the difficulty of caring for her, she was admitted to Rockland State Hospital.

The patient was a wanted child, born by normal spontaneous delivery, after an uneventful pregnancy, on Feb. 25, 1921. Early development was described as having been uneventful until the age of 5. At this time the patient refused to leave her mother long enough to attend kindergarten. She retired more and more from external contacts, daydreamed a great deal and preferred reading to mingling with other children. Despite her propensity for reading, she did poorly in school and lost one or two grades. At the age of 16 she left high school to attend business school. She learned to type and at 18 years took her first job as a typist. She worked intermittently, never holding any job more than several weeks. She continued in this fashion until the onset of her present illness.

Her medical history was uneventful. Menarche appeared at 14 years, without untoward distress. She was somewhat disturbed when her breasts failed to develop and wore brassieres stuffed with cotton to hide this development defect. She never showed interest in boys or approved of cosmetics or bad language. She neither smoked cigarets nor drank alcoholic beverages. During the night of Feb. 2, 1945, the patient awoke weeping uncontrollably. She protested that nothing was wrong and that her behavior was caused by a "bad dream." Thereafter she began to sit around, staring into space, and was apparently depressed. She persistently denied that anything was wrong, but had frequent spells of uncontrollable weeping. On February 15 she was admitted to the New York Psychiatric Institute and Hospital. Physical examination here revealed an asthenic, young adult, white woman with subnormal breast development and a large right femoral hernia in her groin, with a swelling the size of a hen's egg. There was a harsh systolic murmur at the cardiac apex, but the electrocardiogram was normal. All other physical observations were normal, and results of laboratory procedures were negative. Mentally she was listless, showed decreased motor activity and decidedly constricted mental activity. Her emotional reaction suggested tension and depression. She manifested ideas of reference with many persecutory trends—people were watching her and talking about her and accused her of having a love affair and of being a "bad" girl. She blocked in answering questions referring to

sexual matters. The sensorium was intact, but mental grasp and capacity were below normal. The Kent EGY test score was 14 and her intelligence quotient 67. Judgment and insight were very poor.

During her stay at the Psychiatric Institute and Hospital she received ambulatory insulin therapy combined with electroconvulsive therapy, resulting in some well defined improvement. She seemed to be in better contact, was less suspicious and joined with other patients in ward activities. The bizarre hallucinations and delusions which were previously apparent tended to disappear. Unfortunately, she regressed and again became rather seclusive, negativistic and demanding. She showed utter lack of judgment and again manifested auditory hallucinations and delusions. She laughed and wept alternately in response to her hallucinations. Therefore, insulin coma therapy was instituted which was terminated on November 10, at which time the patient had received thirty-three treatments, resulting in twenty-nine comas. She showed no improvement in her mental attitude and was discharged on December 12 as "unimproved."

A few months later this girl was admitted to the Rockland State Hospital. She was given a course of electroconvulsive therapy immediately on admission and received a total of twenty applications, resulting in twenty grand mal seizures, but with no noticeable improvement in her status or condition. The patient visibly deteriorated and became untidy, uncooperative, resistive and mute. She refused to eat and was fed by daily gavage. At the insistence of her parents she was again given electroconvulsive therapy on Oct. 21, 1946. It was noted that, possibly due to inanition, her right femoral hernia increased alarmingly with each convulsion. There was some improvement noted during the first three or four treatments, in that the patient began to eat, was less resistive, was much more communicative and was no longer withdrawn and apathetic. This influenced the decision to continue treatment, with the added safeguard of using curare ("intocostrin"). She received six further convulsive treatments with curare premedication, with observable well defined improvement in her status. Following the ninth intravenous administration of curare and subsequent convulsion, respiration ceased. She was given intravenous intramuscular and intracardial injections of neostigmine compound, nikethamide, epinephrine and caffeine, none of which were helpful. Artificial respiration was given for approximately ninety minutes, but normal respiration and cardiac action could not be reestablished and maintained. Postmortem examination failed to reveal anything unusual, and it was felt that this was indeed a death from respiratory paralysis due to treatment with curare. It is to be noted that during the artificial respiration there were periods when the pulse became palpable and, indeed, on two occasions, artificial respiration was discontinued because spontaneous breathing took place. On both of these occasions, however, the respiration was short lived.

SUMMARY

The present article is offered in order to present the hazards of curarization prior to electroconvulsive therapy. It is felt that an insufficiency of such reports in the literature tends to make physicians utilizing electroconvulsive therapy less cautious than is warranted with so hazardous a drug as curare. Furthermore, we know too little about the personal sensitivity of patients to this drug. In the case in hand, the patient had tolerated curarization, utilizing the same or greater amounts of curare on five previous occasions without untoward effects. There was no strong indication of the patient's intolerance to curare. Possibly this patient had a subclinical form of myasthenia gravis as described by Riggs and Schlomer.¹ Perhaps other factors were at play, but these could not be adequately determined before the fatal accident.

1. Riggs, R. C., and Schlomer, G. M.: *Dis. Nervous System* 8: 382-38 (Dec.) 1947.

Council on Foods and Nutrition

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PROTEINS IN NUTRITION

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The term protein was suggested by the Dutch chemist Mulder in 1839 as a designation for the universal component of tissues, both plant and animal. Protein was characterized by him as "unquestionably the most important of all known substances in the organic kingdom. Without it no life appears possible on our planet. Through it means the chief phenomena of life are produced."¹ Today, more than a century after Mulder, the proteins are still "first" (Greek, *prōteios*) in the regulation of vital processes, and disturbances in their metabolism are associated with nutritive failure and with many pathologic conditions with which the physician is confronted.

Proteins are normal constituents of all animal cells and body fluids with the exception of the bile and the urine. They are essential components of both the protoplasm and the nucleus of the cell; hence they exert a profound influence on growth. They are important in the regulation of osmotic relations between cells and intercellular fluids and between tissues and blood and play a significant role in the fluid balance of the body. Many of the best characterized enzymes have been obtained in crystalline form and have the properties of proteins (the "protein enzymes").² A considerable number of the hormones, chemical regulators of the body, either are proteins (the so-called protein hormones)³ or are derivatives of proteins. Many of the substances associated with immunologic and antigenic reactions and similar phenomena are known to be proteins. In recent years the causative agents of certain virus diseases (notably the tobacco mosaic and the bushy stunt of the tomato) have been obtained in crystalline form and exhibit the characteristic properties of nucleoproteins; yet when inoculated into the proper host they multiply and give rise to the specific pathologic changes associated with the virus.⁴ Bacteriophage, a filtrable agent with the properties of a virus, is also believed to be a nucleoprotein. Finally, a nucleoprotein is the major constituent of cell nuclei and is believed to constitute the chromatin of the nucleus and thus to form the principal component of the chromosome.⁵

It is notable that proteins exist as large molecules or, possibly, aggregates of molecules. In table 1 are pre-

sented the estimated molecular weights of a few important proteins. It should be pointed out that in the determination of the molecular weights of proteins, many difficult problems arise and that the values obtained by the various methods do not check exactly. The values presented will, it is believed, afford some approximation of the probable size of protein molecules. The large molecules of even the simpler proteins may be compared with those of some other important constituents of tissues or body fluids: sodium chloride, 58; urea, 60; ascorbic acid, 176; dextrose, 180; lactose, 342; carotene (provitamin A), 537, and glyceryl tristearate (a typical fat), 891.

When this large protein molecule is broken down by the addition of the elements of water (hydrolysis), a considerable number of much simpler units, or building stones, are formed, whose molecular weights range from 75 (aminoacetic acid, known also as glycocoll or glycine) to 240 (cystine). These units have the structure and properties of ampholytes (dissociation, so that they may function either as an acid or as a base depending on the p_H of the environment) and are known as α -amino

TABLE 1.—Sources and Approximate Molecular Weights of Proteins

Protein	Source	Estimated Molecular Weight
Insulin	Pancreas	35,000 or 46,000
Pepsin	Gastric juice	35,200
Benze-Jones protein	Urine	35,200
β -Lactoglobulin	Milk	42,000
Ovalbumin	Hen's egg	43,000
Zein	Corn	50,000
Hemoglobin	Human blood	70,000
Serum albumin	Human blood	70,000
γ -Globulin	Human blood	150,000
Urease	Jack bean	422,000
Thyroglobulin	Thyroid	650,000
Antipneumococcus serum globulin	Horse blood	845,000
Bushy stunt virus	Tomato plant	7,600,000
Tobacco mosaic virus	Tobacco plant	40,000,000

acids. From the chemical standpoint, they are characterized by the presence of a carboxyl (COOH) group with acidic properties and an amino (NH_2) group with basic properties, the two groups being attached to the same carbon atom.

The character of the remainder of the amino acid molecule (designated by R, fig. 1) varies, but all the typical products of hydrolysis have in common the presence of the carboxyl and amino groups. Important chemical groupings in various amino acids are sulfur (cystine and methionine), hydroxyl (threonine and serine), benzene nucleus (phenylalanine and tyrosine), guanidine nucleus (arginine), indolyl ring (tryptophan) and imidazolyl ring (histidine).

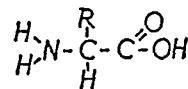


Fig. 1.—Structure of an amino acid.

Certain units or amino acids present in the protein molecule are considered of especial importance in the structure of tissue (growth) and are commonly designated as the essential amino acids. The chemical nature of these essential units will be discussed subsequently. The formulas of the other amino acids may be obtained from any of the numerous standard textbooks on biologic chemistry.

The amino acids are joined to each other in the protein molecule by a linkage known as the peptide linkage, in which the basic (amino) group of one acid is linked to the acidic (carboxyl) group of the adjacent acid.

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1. Mulder, G. J.: The Chemistry of Animal and Vegetable Physiology, cited by Mendel, L. B.: Nutrition: The Chemistry of Life, New Haven, Conn., Yale University Press, 1923, p. 16.

2. Northrop, J. J.: Crystalline Enzymes, New York, Columbia University Press, 1939.

3. White, A.: Protein Hormones, in Cold Spring Harbor Symposium on Quantitative Biology, Cold Spring Harbor, L. I., N. Y., The Biological Laboratory, 1938, vol. 6, p. 262.

4. Stanley, W. M.: Some Chemical, Medical and Philosophical Aspects of Viruses, Science **93**: 145-151 (Feb. 14) 1941.

5. Mirsky, A. E.: Chromosomes and Nucleoproteins, in Nord, F. F., and Werkman, C. H.: Advances in Enzymology and Related Subjects of Biochemistry, New York, Interscience Publishers, Inc., 1943, vol. 3, p. 1. Darlington, C. D.: Nucleic Acid and the Chromosomes, in Symposium of the Society for Experimental Biology, London, Cambridge University Press, 1947, vol. 1, p. 252.

6. Omitted.

with the loss of a molecule of water. A compound made up of two acids thus joined is known as a dipeptide (fig. 2), and a similar compound which contains several (usually an unknown number) amino acids bound together in the peptide linkage is known as a polypeptide.

Hydrolysis of the dipeptide for which the formula is given would break the peptide linkage ($-\text{NH}-\text{CO}-$), and the component amino acids would be obtained. While the peptide linkage may not be the only linkage between the amino acids of the protein molecule, it is certainly by far the most important one. This is borne out by the chemical properties of native proteins (proteins as they are found in nature as contrasted with derivatives formed by the action of heat, alcohol, water, salts, enzymes and the like). The biologic reactions of the proteins are also more closely related to those of amino acids than to those of any other type of hydrolytic product of protein, such as proteoses or peptones.

Just like the amino acids, which are ampholytes and may react with either acids or bases, depending on the

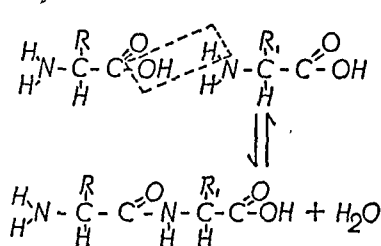


Fig. 2.—Structure of a dipeptide.

of their environment, the proteins as complexes of amino acids (polypeptides) may combine with either acids or bases. For the most part, the proteins as they exist in fluids and tissues of the animal organism function as acids (play the role of anions) and are in combination with bases (cations). Thus, the protein hemoglobin of the erythrocytes is combined in the cell with base (chiefly potassium) as a salt; similarly, milk contains various salts of casein, of which calcium caseinate is important.

When two amino acids are joined in peptide linkage, two different peptides may be obtained; with three amino acids, six peptides, and with five amino acids, 120 peptides. These are known as isomers, since they are all made up of the same units and have the same percentage composition. They differ, however, in the arrangement of the amino acids in the peptide chain (for instance, in the case of a tripeptide, a-b-c, a-c-b, b-a-c, b-c-a, c-a-b and c-b-a, when a, b and c are three different amino acids). Since more than twenty amino acids are known to be of general occurrence in the protein molecule, it is obvious that the possible number of isomeric proteins (polypeptides) is very large. A peptide made up of twenty amino acids, most commonly obtained in the hydrolysis of protein,⁷ each acid occurring once only in the chain, would have a molecular weight of about 2,700. A simple calculation shows that the number of possible isomers of this peptide would be 2,432,902,008,176,640,000, a number beyond the range of human thought.⁸ Each of these peptides would have the same percentage composition, would yield the same amino acids on hydrolysis in the same proportions and would have similar properties. Each would differ from the other in some slight variation in the arrangement of the component amino acids of the peptide chain. Each would, therefore, be a chemical individual distinct from the other isomeric peptides.

If it is remembered that the protein molecule is much larger than the peptide just discussed, that native proteins vary greatly in the amounts of amino acids which they yield on hydrolysis and that some linkages other than the simple peptide linkage almost certainly occur in the protein molecule, it is evident that the possible number of different proteins as they exist in nature is almost infinite. This individuality of natural proteins finds expression in the so-called specificity of the proteins. This may be most simply defined by the statement that every species tends to construct within the organism a protein characteristic of that species. Thus, casein of cow's milk is believed to differ from casein of goat's milk, protein of beef muscle to differ from protein of pork muscle and serum protein of human blood to be different from serum protein of beef blood. While in my opinion the basis of this specificity is undoubtedly chemical and is related to the possibilities of isomerism just discussed, this cannot be proved at present. The specificity of proteins of different biologic origin must for the present be demonstrated by biologic reactions, by the reactions observed when "foreign" protein is introduced into the organism. The phenomena of anaphylaxis, of antibody formation, of food allergies and of many other antigenic and immunologic reactions are all manifestations of this biologic specificity of the proteins, so important in many considerations of medical practice.

The protein of the human diet is obtained from both animal and vegetable sources. Among foodstuffs of animal origin, meats (both muscular and glandular tissues), fish, eggs, milk and milk products are most important. Vegetable protein is most readily available in the cereal grains (wheat, corn, rice, rye and barley), the seeds of legumes (peas and various kinds of beans) and many nuts, of which the peanut is perhaps most important in the human diet. It is estimated that the cereals contribute about 25 per cent of the total calories of the diet of the American people.

The proteins of the foodstuffs, large molecules with colloidal properties, do not diffuse readily through biologic membranes. If these dietary proteins are to be utilized, it is necessary that they be altered so that passage through the mucous membrane of the intestine is possible. This is accomplished in the gastrointestinal canal by the process of digestion, by the action of a group of biologic catalysts or enzymes, whose activities are so coordinated as to effect a rapid and complete hydrolysis to the soluble diffusible amino acids. Since biologically the amino acids are nonspecific, digestion results in the loss of the biologic specificity of the proteins; if this were not the case, large amounts of "foreign" protein would normally enter the blood stream from the alimentary canal and food allergies of protein origin would be of frequent occurrence.

The enzymes concerned in this process are pepsin and rennin of the gastric juice, trypsin and chymotrypsin of the pancreatic juice and a group of enzymes known as peptidases, which are present in the pancreatic and intestinal juices and hydrolyze the peptides. (It should be noted that commercial "trypsin" and the trypsin referred to in the older literature are mixtures of the proteolytic enzymes of pancreatic tissue and include not only trypsin but also chymotrypsin and peptidases.⁹) Digestion is best effected if these enzymes act on the proteins of the diet in the natural anatomic sequence, i.e., gastric, pancreatic and intestinal.

7. Two amino acids commonly listed in textbooks of biochemistry are not now accepted as units of the protein molecule, i. e., hydroxyglutamic acid and norleucine.

8. Abderhalden, E.: *Lehrbuch der physiologischen Chemie*, ed. 6, Berlin, Urban & Schwarzenberg, 1931, p. 302.

9. Northrop,² pp. 62-63.

Digestion proceeds rapidly in the intestine; the amino acids are absorbed as rapidly as they are formed by the activity of the enzymes. Although digestion studies in vivo with experimental animals with fistulas at various levels throughout the alimentary canal have clearly demonstrated that the major portion of the ingested protein is completely hydrolyzed to amino acids, or at least to very simple peptides,¹⁰ the question of the absorption of some portion of the protein of the diet in unaltered form into the circulation must be considered. Early workers whose experimental methods were not adequate were led to favor the possibility of such an absorption in unusual circumstances, particularly in young animals, in which the intestinal membrane was assumed to be more readily permeable. The use of the newer methods of immunology, by which accurate detection and differentiation of very small amounts of specific proteins have been made possible, has thrown new light on the question. By these methods it now appears to have been demonstrated that in many persons, without regard to age or sex, a detectable amount of certain proteins frequently enters the blood stream in an unaltered state via the alimentary canal. As Walzer¹¹ has expressed it, "The regularity with which the phenomenon occurs in the average individual and the uniformity of results when repeatedly tried under identical conditions on the same subject, preclude the possibility that this is an accidental or unusual occurrence." Of the protein foods studied, the most extensive observations have been reported with egg white.¹² These observations are of special significance in relation to the phenomena of sensitization to specific protein foods. However, it should be remembered that the methods of immunology are capable of detecting exceedingly minute amounts of protein and that the total amount of protein absorbed thus unaltered must be slight. One may, then, with a reasonable degree of confidence look to the behavior of the individual amino acids for the interpretation of the role of protein in normal nutrition.

The products of the digestion of proteins, chiefly the amino acids, enter the portal blood on absorption from the intestine and are distributed to the tissues by the systemic blood. The postabsorptive increase in the amino acid nitrogen of the blood, although not large, is unquestioned. The amino acids are rapidly taken up by the tissues, and the amino acid content of the blood returns to normal.¹³

One of three fates awaits the amino acids which thus enter the cell. The first is condensation with other amino acids, selected by the particular tissue in question from the pabulum supplied to it by the blood, to form the protein characteristic of that particular tissue or cell. This specific synthesis, the converse of digestion, makes possible the maintenance of the individuality of the cell. This process acquires a particular significance in young animals in which building of new tissues.

growth, must occur for normal development and in the adult in normal pregnancy and lactation.

A second metabolic path is utilization of the amino acids for some special purpose in the animal economy apart from the general synthesis of cellular protein. Examples of this are the synthesis of such proteins as hemoglobin, fibrinogen and the serum proteins. Amino acids are utilized also for the formation of specific proteins with hormonal function (insulin and prolactin) or amino acid derivatives which are hormones (epinephrine and thyroxine) or chemical regulators which are not usually classed as hormones (glutathione, histamine and creatine). The synthesis of the "protein enzymes" (pepsin, trypsin, catalase and carbonic anhydrase) also occurs. The details of the reactions which lead to the synthesis of such specialized proteins and protein derivatives are not as yet clearly understood.

After the needs of the cells for these two purposes have been met, an excess of amino acids may still remain in the cells. The fate of this amino acid fraction is deamination—removal of the nitrogenous portion of the molecule—and utilization of the non-nitrogenous portion, since, in contrast to fat and carbohydrate, storage of protein or amino acids for any considerable time does not appear to be possible. The nitrogenous fraction of the molecule, split off as ammonia, is rapidly converted into urea under normal conditions and is eliminated in this form by the kidneys. The efficiency of this transformation is demonstrated by the fact that normally systemic blood contains less than 0.1 mg. of ammonia nitrogen per hundred cubic centimeters, while the urea content of normal blood calculated as urea nitrogen is approximately 17 mg. per hundred cubic centimeters. The non-nitrogenous residue which remains after deamination may either be transformed into dextrose and used in this form, the antiketogenic fraction of the protein molecule, or be converted to fatty acids, the ketogenic fraction of the protein molecule. Whether the non-nitrogenous residue is converted to dextrose for utilization in that form depends on the chemical structure of the original amino acid. In general, one may say that about half of the amino acids present in the molecule of any individual protein may give rise to dextrose in intermediary metabolism.

Physiologic and nutritional studies alike have emphasized the role of the amino acids as structural elements, the building stones of living protoplasm. What are the amino acid requirements for the construction of new cells? Are all the amino acids of equal importance in nutrition? These questions have been answered in part by the studies of Rose, which were based on the pioneer work of Hopkins and of Osborne and Mendel. It should be emphasized that the discussion immediately following concerns the requirements for growth of one species, the white rat. Rose¹⁴ first demonstrated that it was possible to obtain normal growth of young white rats when the protein element of the diet was supplied by a mixture of chemically pure amino acids, which included those acids known to be of general occurrence in the protein molecule. The effect of the removal of the various individual amino acids from this mixture was then studied. The absence of certain acids from the diet resulted in impaired growth or in some cases considerable losses in weight and ultimately death. These amino acids, designated

10. Abderhalden, E.; Kautzsch, K., and London, E. S.: Studien über die normale Verdauung der Eiweisskörper im Magendarmkanal des Hundes, *Ztschr. f. physiol. Chem.* **48**: 549-556, 1906. Abderhalden, E.; Baumann, L., and London, E. S.: Weitere Studien über die normale Verdauung der Eiweisskörper im Magendarmkanal des Hundes, *ibid.* **51**: 384-390, 1907.

11. Walzer, M.: Studies in Absorption of Undigested Proteins in Human Beings: I. A Simple Direct Method of Studying the Absorption of Undigested Protein, *J. Immunol.* **14**: 143-174 (Sept.) 1927.

12. Wilson, S. J., and Walzer, M.: Absorption of Undigested Proteins in Human Beings: IV. Absorption of Unaltered Egg Proteins in Infants and Children, *Am. J. Dis. Child.* **50**: 49-54 (July) 1935. Ratner, B., and Gruelch, H. L.: Passage of Native Proteins Through the Normal Gastrointestinal Wall, *J. Clin. Investigation* **13**: 517-532 (July) 1934.

13. Van Slyke, D. D.: Physiology of the Amino Acids, *Science* **95**: 259-263 (March 13) 1942.

14. Rose, W. C.: The Significance of the Amino Acids in Nutrition, in *Harvey Lectures, 1934-1935*, Baltimore, Williams & Wilkins Company, 1936, vol. 30, p. 49; The Physiology of Amino Acid Metabolism, *Proc. Inst. Med. Chicago* **12**: 98-110 (April 15) 1938.

enous equilibrium is again obtained, but at a higher level of excretion. If new protein is being synthesized in the body (growth, pregnancy and lactation), the nitrogen excreted is less than that of the diet and the subject is said to be in positive nitrogen balance. When the nitrogen excreted is greater than the dietary nitrogen, a condition of negative balance is obtained. This indicates an inadequate intake of dietary protein or an excessive breakdown of body protein associated with disease.

The level of endogenous nitrogen protein metabolism may be obtained by a consideration of the nitrogen excretion of an adult maintained on a diet high in its content of fat and carbohydrate but containing no protein. Experimentally this has been observed to approximate 3 Gm. a day for a man weighing 70 Kg., or about 20 Gm. of protein.³⁸ There is, however, evidence that to provide a safe allowance for health, protein in excess of the requirements for maintenance is essential. It is argued that excessive consumption of protein imposes a burden on the organism and is likely to be harmful. The proponents of the high protein diet, on the other hand, argue that a surplus of protein may have a beneficial effect on health and well-being and cite studies of racial groups which indicate that physical efficiency and health can be related directly to the intake of protein and particularly of animal protein. The high protein diet of the Eskimo, in which the protein is obtained almost entirely from meat, does not appear to have resulted in a high incidence of renal disease in this group.³⁹ The carefully made studies of the metabolism of two Arctic explorers who lived for a year in the temperate zone on a diet of meat only are of particular interest. It must be remembered, however, that in studies of human populations the protein element is only one of many factors in health and that it is difficult to assess the role of dietary protein alone without many greatly extended studies.⁴⁰

Outstanding among the pathologic conditions which have been associated with prolonged ingestion of a diet inadequate in its protein content is nutritional edema (known also as war or starvation edema), which has been observed clinically in Europe, in the Orient and in the United States and can be produced experimentally in animals maintained on a low protein diet.⁴¹ The continued ingestion of the low protein diet results in low levels of plasma protein (particularly the albumin fraction), and the resultant lowering of the "effective" osmotic pressure of the plasma is believed to be one of the causes of the edema.

This discussion indicates the desirability of caution in the selection of a standard protein level for national nutrition. It is not necessary to enter into the details of the controversy between the advocates of the low and high protein diet, a controversy which is excellently and impartially presented in the classic text of Lusk.⁴² Sherman, after a careful consideration of the acceptable balance experiments with human beings, in which nitro-

gen equilibrium was established at low levels of dietary protein, concluded that "a standard allowance of 1 Gm. of protein per kilo of body weight per day appears, therefore, to provide a margin of safety of 50 to 100 per cent as far as requirements of adult maintenance are concerned."⁴³ This standard for adult maintenance has been accepted almost universally, while the need for larger amounts of protein in diets of growing children and of pregnant and lactating women is clearly recognized. The recently adopted standards for national nutrition, as proposed by the Food and Nutrition Board of the National Research Council, provide for 70 Gm. of protein a day in the diet of a man weighing 70 Kg. and 60 Gm. of dietary protein for a woman weighing 56 Kg.⁴⁴

Estimates of the increased requirements for protein during pregnancy and lactation vary greatly.⁴⁵ The protein requirement per kilogram of body weight is high in infancy and decreases as growth occurs until after puberty, when the adult requirements only are necessary. The desirable amount of dietary protein is estimated to vary from 4 Gm. per kilogram a day at 1 to 3 years to 2 Gm. at 17 to 18 years.⁴¹ The necessity of proteins of milk, during the period of active growth can hardly be overemphasized. That increased muscular activity necessitates a larger intake of protein is as yet unproved. Traditionally the diet of highly trained athletes and of laborers engaged in hard work, whose calorific requirements are high, contains much meat and supplies large amounts of proteins.⁴⁶

An increased destruction of tissue protein has long been recognized in a variety of infectious diseases. More recently, loss of nitrogen, as evidenced by decided negative balances, has been observed in patients undergoing surgical treatment (notably after fractures) and in patients with severe burns.⁴⁷ In an attempt to make good this loss of protein from the body, a loss which may continue for some days, high protein diets have been recommended, which supply quantities of protein far in excess of those of the "recommended dietary allowances" of the Food and Nutrition Board.⁴⁴ The cause of this increased destruction of protein is not yet understood.⁴⁷

The preceding discussion has been concerned with the quantitative aspects of the protein requirements of human beings. That the dietary protein will be derived from a wide variety of foodstuffs of both animal and vegetable origin is assumed. In the United States, it is estimated that animal protein makes up at least 50 per cent of the protein of the usual diet. If the variety of foodstuffs is limited, care must be exercised in the selection of protein. The chief consideration in the choice of protein must be the furnishing of the essential amino acids to be made available to the tissues by digestion. Since the optimal mixture of the essential amino acids for the nutrition of human beings is not yet known, the diet must supply all the known essential amino acids in liberal amounts. Animal proteins usually have a greater biologic value than do the proteins of vegetable origin. Thus zein, one of the proteins of

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the maize kernel, contains no lysine or tryptophan, two important essential amino acids. When the diet is derived exclusively from plant materials, more protein must be eaten. A notable exception is gelatin. This protein, a product of food technology and derived from collagen, completely lacks at least two essential amino acids, valine and tryptophan, and contains little tyrosine and cystine, amino acids which, while not essential, may be important in nutrition. Gelatin supplies a mixture of amino acids, which is inadequate if used as the sole or chief source of these tissue-building stones. The recent claims for the superior food value of gelatin require further and more careful study.⁴⁸ The excellent quality of the mixture of proteins present in milk is notable.

Carbohydrates spare body protein. The breakdown of body protein is significantly increased if the supply of the energy-producing foods and particularly of carbohydrates is not ample. The consideration of the total calorific value of the diet is of special importance when the diet is low in its protein content, as are certain diets prescribed for therapeutic purposes. Diets of high calorific content usually contain liberal or large amounts of protein.

It is known that in the case of certain essential elements present in food (notably the vitamins) the nutritive value may be influenced by preservation, processing and cooking. Thus the nutritive values of a natural foodstuff as determined by chemical analysis may not be a safe guide to its value when prepared for consumption. Since foodstuffs which are important sources of protein are seldom consumed in the raw state, possible changes due to heat must be considered. Even milk in present day practice is usually subjected to the mild heat of pasteurization. The evidence in the case of proteins is conflicting. The biologic value of the protein of certain legumes is believed to be increased by cooking, while the nutritive value of some other proteins (meat, casein and milk products) appears to be lowered by heat.⁴⁹ A detailed discussion is not possible here. Whether such changes are sufficiently extensive to be of practical significance remains to be determined.

No discussion of recent developments in protein metabolism can neglect the mention of the experiments of Schoenheimer in which isotopic nitrogen (N^{15}) has been used as a marker.⁵⁰ These experiments indicate that a "rapid and continuous chemical regeneration of the cell proteins is a general characteristic of living matter," but, despite this striking and continuous chemical activity of the organ proteins, it is believed that these processes "lead to no final quantitative or qualitative changes" in the composition of the tissues.⁵¹ This is in confirmation of the older belief in the constancy of composition of the structural elements of protoplasm. While the observations of Schoenheimer and his group are of great physiologic significance, it is not believed that at present they suggest any changes in the current practices of dietetics so far as concerns protein.

In an earlier discussion (1942) of protein in nutrition, I quoted Karl Thomas (1929), with reference to the chief unsolved problems of the role of proteins in nutrition. No better conclusion to this presentation of the problems of 1948 can be given than to reiterate the statements of Thomas.⁵² "What we need to know is: 1. Which amino acids must be present in the food, 2. How much we require of each, 3. And to what purpose." Today, after more than a decade of intense interest and research in protein metabolism, these questions still epitomize the problem of the role of proteins in nutrition. When they can be answered exactly, the role of protein in the diet will be known and one will be able to determine the dietary value of every mixture of proteins in natural foodstuffs. Until this knowledge is obtained, one may rest assured that for the healthy person, natural protein chosen from a wide variety of foodstuffs and supplied in ample amounts is the practical solution of the problem of dietary protein. The body may be able to synthesize the nonessential amino acids from the essential ones, but there is no knowledge that the imposition of this task on the cells represents physiologic economy. Living organisms have synthesized a wide variety of proteins containing both essential and nonessential amino acids; surely one cannot do better at present than to insure such a supply of amino acids as mixed proteins afford. The gastronomic urge will prompt one to eat meat, eggs and other protein foodstuffs in preference to unappetizing protein hydrolysates or mixtures of pure amino acids.

SUMMARY

Proteins are large complex molecules with colloidal properties and function as ampholytes, i.e., may dissociate, either as acids or bases. The structural units of the protein molecule are α -amino acids, of which some nineteen are clearly recognized as components of the usual types of proteins.

Proteins are almost completely digested to the amino acids in the gastrointestinal canal; the amino acids are absorbed into the portal blood and circulate in the systemic blood, from which they are rapidly removed and stored for use by the cells of the various tissues.

The amino acids, thus made available from the diet, may be used for the various synthetic reactions, formation of proteins and of essential products derived from amino acids (e.g., thyroxine, epinephrine). The amino acids not required for synthesis are deaminized with oxidation to yield ammonia and α -keto acids. The ammonia is converted to urea and excreted by the kidneys.

Certain amino acids, designated as essential, cannot be synthesized by the mammalian organism and must be supplied by the diet. The other, nonessential, amino acids can be synthesized by the body.

Both animal and vegetable foodstuffs are good sources of protein, provided that they supply adequate amounts of the essential amino acids. In the usual American dietary, the amounts of protein derived from animal (meats, fish, milk and milk products, eggs) and vegetable (cereals, legumes, nuts) sources are about equal.

The minimal recommended protein of the diet for an adult man (70 Kg.) is 70 Gm., or 1 Gm. per kilogram of body weight, and for an adult woman 60 Gm. The required amounts of dietary proteins are increased by pregnancy and lactation. The requirements of the growing child are greatly in excess of those of the adult (e.g., 2 to 4 Gm. per kilogram of body weight per day).

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SATURDAY, SEPTEMBER 18, 1948

THE HAZARDS OF X-RAY

Medical science advances rapidly. New discoveries are announced frequently. This makes the physician's responsibility heavier and heavier. He has to know the old science and the new also. He has to know the power and the hazards of new devices and must use good judgment in balancing probable good against possible harm.

Think of radiation! The engineers and the nuclear physicists keep developing new apparatus. New researches, including some by the health physicists and biologists connected with the development of the atom bomb, have taught us more about the hazards of the old apparatus, also, such as x-ray and radium.

Even small quantities of roentgen or radium rays can prove damaging. Radiation injury to the skin sometimes leads to cancer, coming even many years after. Some of these patients did not show immediate injury, even so much as redness of the skin. Repeated or continuous irradiation of the whole body can produce aplastic anemia, sometimes leukemia, even when the individual doses have been moderate.

Roentgen rays for diagnosis (films and fluoroscopy) are safe only because radiologists have a long tradition of being careful and because films and screens are so sensitive as to require rather small exposures. Examples of accidental erythema or redness continue to appear, and even of disastrous roentgen ulceration. Many of these come from fluoroscopy for bone setting and for removing foreign bodies. The hazard seems higher among surgeons and general practitioners than among x-ray specialists. Paradoxically, the smaller types of x-ray machines have provided most of the worst cases. Every radiologist has a collection of anecdotes to show how dangerous roentgen rays can be in the hands of those not specially trained.

In treating cancer big doses of radiation are used. Resulting damage to skin and normal structures is severe and obvious. Blistering is often only the proof that a thoughtful and conscientious therapist has given enough radiation to have a chance to cure. Such

damage, including the possibility of late roentgen ulceration, or late roentgen cancer, is not too high a price to pay for cure of a cancer; regrettable, but at present necessary. Perhaps new medical discoveries regarding cancer will outmode the present radiation therapy.

Until then physicians will continue to apply radiation. Patients will bear the accompanying damage. Radiologists must continually test and retest their judgment to see that it is dependable in applying such doses, and they must measure and remeasure the critical quantities of roentgen rays that are applied.

When benign conditions, not cancer and not lethal, are concerned the point of view is different. The situation is not desperate. If the disease does not threaten life, treatment that may do harm should be avoided, or treatment that may lead to trouble later in life. Are radiologists too light hearted in advising a few hundred roentgens for subacromial bursitis? What degree of desperation should be demanded in this painful condition before inflicting the (rather mild) roentgen injury incidental to 300 r? And if not relieved, how many times shall the damage be compounded by repeated dosage? There is no "official" answer to this or to similar pointed questions in the therapy of acute and chronic arthritis. Such a dose may in fact be thoughtfully accepted in many a case, but in every instance it ought assuredly to be thoughtful and not "routine."

In cases of postoperative parotitis or of gas gangrene, such moderate doses are given more boldly, even though one is less sure of their effectiveness, for the acute danger of the disease is apparent.

In dermatitis, especially allergic dermatitis, roentgen radiation is often an almost magical palliative. Recurrences are common. Treating the recurrence increases the total irradiation. After many recurrences the total mounts to the danger limit, but one also foresees that the patient will have been well persuaded by the many temporary successes that roentgen irradiation is the treatment he needs. His demand for another treatment may be well nigh undeniable. Foresight therefore warns that one should not use roentgen rays in dermatitis until literally everything else has been tried most patiently.

Many babies have red birthmarks, hemangiomas, typically "strawberry marks." These often respond well to roentgen rays or radium. Heavy doses have been followed in some by equally unsightly scars or telangiectases. A few have resulted in arrest of epiphyseal growth and a deformed limb. There are reports that nearly all strawberry marks disappear spontaneously by the age of 5 years. In the face of this, a radiologist needs to be sure indeed that his irradiation is such as will do little damage to the skin and no damage to the bones.

Common warts are distressing to fastidious persons and on the sole of the foot can be crippling. Topical, surgical and medicinal treatments are often disappointing. Radiologists rather generally accede to a request to treat them, and many times succeed. Doses advised are not small in amount, and are tolerable at all only because small in area. Nevertheless, there are many instances of ulcers following roentgen irradiation even by trained radiologists. Perhaps it is too soon to condemn such therapy, but at least the treatment should not be undertaken lightly. One should be certain of the dose and area. Careless history taking or slovenly records can result in repeated irradiation of the same area. This can be disastrous, even if the interval between treatments has been long.

In attempts to stem the discouraging tide of hardness of hearing great enthusiasm has developed for radium irradiation of the mouth of the eustachian tube. This is being applied to children under the supposition that much adult deafness arises from years of interference with aeration of the tympanum. How good the statistical evidence is of this etiology of adult deafness is not yet established. One has no doubt of the effectiveness of irradiation in shrinking the hypertrophied lymphoid tissue. The real question, not yet answered, is how much late damage may develop from these irradiations. Although the total dose in milligram-hours seems small (1 per cent of what is often used in uterine cancer), yet the local tissue dose is not small, for the radium is only 1 or 2 mm. from the mucous membrane. Otolaryngologists might be inclined to feel that all they have to do is to buy or rent the proper radium applicator. The real difficulty is in judging whether or when such a damaging therapy is justified.

A therapeutic irradiation that has long been viewed askance by many radiologists is its use for epilation to cure ringworm of the scalp in children. In the early days when equipment was unreliable and measuring instruments unsatisfactory, alopecia was a frequent sequel. Today many radiologists and many dermatologists who do have adequate equipment nevertheless refuse to do therapeutic epilations. They feel that the chances that permanent alopecia will result are not negligible and that the blame for such an accident is beyond their willingness to face. This attitude seems less than worthy of our profession. If any patients with ringworm of the scalp need irradiation, then duty demands that one do it if technically equipped, or if not so equipped that one know whither to refer the patient to get it done.

Most cases of tinea capitis can be cleared quickly or slowly by local treatment with proper medicaments (iodine, fatty acids, etc). Some, especially *Microsporon audouinii*, will not clear and would persist until puberty so alters the sebum as to make the soil no longer suitable for the organism. Epilation, however,

results almost always in cure. Pulling the hairs by hand is so tedious as to be impractical. Roentgen epilation is practical and has been demonstrated to be safe, provided the technic is painstakingly correct. Even so, a perfectly even effect over the whole scalp seems almost impossible to attain. The dosage must be precise. Some careful radiologists measure the output of the tube immediately before every epilation treatment. When such care is taken alopecia rarely follows.

A conscientious radiologist might well equip himself to offer this service. He would undertake it in close consultation with the practitioner, with the help of a dermatologist if necessary. Considering recent advances in the topical (ointment) treatment of tinea capitis, he would insist that modern methods first be persistently and carefully applied under competent control for three months. He ought to have cultural proof that the infection is in fact *M. audouinii*, that he is not dealing with mere reinfections from a mangy dog or cat. So safeguarded, one could conclude that a patient would be well advised to risk the tiny chance of alopecia in order to escape the overwhelming probability of persisting scalp infection throughout all the remaining years to puberty.

Roentgen treatment for benign conditions should be used only with a vivid appreciation of its capacity for harm and with an overt evaluation of its presumptive benefits weighed against the known and possible injuries inseparable from its use in effective dosage.

IN TIME OF PEACE

If current efforts at world organization for peace fail, military leaders warn that the next war will not be a declared war but might start with bombing or other attack on our large cities; overnight, they say, we may find ourselves with enormous refugee populations maimed, homeless and confused; industrial populations and rural populations may be attacked just as directly by means of new technics. Confusion will be "twice confounded" unless the medical and allied professions have somehow managed, through a process of preplanning and preexamination, to provide for the prior identification and physical fitness classification of every citizen for military or civilian duties in an all-out response of the entire population.

Accepting these warnings of military leaders at their face value, the medical and allied professions must organize still further to meet the nation's need. The following important services will be required in the months immediately ahead; first, developing a system for classifying all persons according to their physical fitness for military duty and for civilian duty; second, examination and classification of the population of cities of 100,000 and over; third, extension of these efforts

to the remainder of the population as rapidly as practicable, and, fourth, among other measures not directly medical in nature, assisting in developing a system for rapid personal identification.

The task will require the combined efforts of the medical and allied professions over months and perhaps years. The beginning of a rough but apparently usable system of classification is already available in the Physical Profile Serial used by the British and Canadian Armies in World War II and developed further and applied by our armed forces. The modification of this classification system to meet the needs of all civilian as well as military groups would not appear to be a too difficult task.

If the proper government authorities will make it plain as to what is actually needed, the medical profession will do its part. Though the leadership under current organization must come from other than the Defense Establishment, all efforts must be integrated with the military plans. Through the official bodies created by the House of Delegates and the Board of Trustees the American Medical Association can act promptly and efficiently.

Current Comment

INTERRELATIONS OF CANCER AND ARTERIOSCLEROSIS

Cancer and arteriosclerosis together account for about one half of all deaths. An examination of the general characteristics and of the factors contributing to the development of the two diseases yields evidence suggesting the possible existence of certain connections between them. Cancer as well as arteriosclerosis affects most often persons of middle or advanced age. Thus, a long preparatory or latent period seems to precede the manifestation of both conditions. Clinical and experimental evidence indicates that tissue anoxia may be involved in the production of cancer as well as of arteriosclerosis. Among the various causative agents known or suspected for both diseases cholesterol and its oxidation products assume a special place. For many years hypercholesterolemia and disturbances of the lipid metabolism associated with diabetes mellitus and hypothyroidism have been related to the development of atherosclerosis. It is known, on the other hand, that endemic nontoxic nodular goiter is the main source of cancer of the thyroid,¹ while recent statistical analyses show that the incidence of cancer is higher in diabetic persons than the expected incidence among people of the general population.² It may not be, therefore, a mere coincidence that certain deficiency states involving the oxytropic and lipotropic factors of the vitamin B

complex are related to disturbances of the lipid metabolism favoring the development of atherosclerosis as well as of cirrhosis of the liver, with subsequent carcinoma of that organ.³ The procarcinogenic action of biotin and fat and the anticarcinogenic effect of riboflavin on the production of hepatocarcinoma of rats given certain aromatic azo dyes furnish additional evidence in this respect. The occurrence of seasonal vitamin B deficiency has been related to the excessive incidence of precancerous and cancerous lesions of the oral and pharyngeal mucosa among the population of Northern Sweden, while the feeding of a diet deficient in choline and pyridoxine has caused in rats the appearance of papillomatous excrescences of the gastric mucosa and of primary cancer of the liver. Dietary ingestion of cholesterol has been used with contradictory results for stimulating in experimental animals the carcinogenic action of tar, crude paraffin oil and ultraviolet rays. Weil-Malherbe and Dickens⁴ observed that the carcinogenic potency of 3,4-benzopyrene injected subcutaneously into mice was accentuated when this agent was dissolved in a 3 per cent solution of cholesterol in tricaprylin, while it was reduced when the chemical was administered in a tricaprylin solution containing 1.5 per cent lecithin. Cholesterol and lecithin seem to display in these experiments the same antagonism that they are known to possess in the development of atherosclerosis. Hieger⁵ recently suggested that cholesterol itself might be a slow carcinogen or might be the carrier of small amounts of a potent carcinogen. Cholesterol seeds have been used for years as carriers of carcinogenic hydrocarbons in experimental work; it may be that this steroid exerts similar affinities and retaining properties for lipid-soluble endogenous or exogenous carcinogens. Photochemical or thermic oxidation products of cholesterol have been related in recent years to the development of actinic cancer of the skin and of "dietary" cancer of the stomach.⁶ Heuper observed in rats exposed to prolonged ultraviolet irradiation not only cancers of the skin, but also extensive arterial calcification. Similarly the development of leukemia and arteriocalcinosis has been observed⁷ in mice fed a diet low in cystine and painted with an ethereal solution of methylcholanthrene. Finally, mention may be made of the not infrequent coexistence of endarteritic changes in the subcutaneous arteries and carcinomatous reactions of the epidermis in chronic radiodermatitis. Although the observations recorded do not permit definite conclusions as to the nature and existence of interrelations between cancer and arteriosclerosis, the evidence presented is sufficient to merit general attention.

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ORGANIZATION SECTION

JOINT COMMITTEE FOR THE COORDINATION OF MEDICAL ACTIVITIES

Abstract of Report of Meeting in Chicago, June 5

The meeting of the Joint Committee for the Coordination of Medical Activities was called to order by the Chairman, Dr. Ernest E. Irons, at 9:34 a. m., Saturday, June 5, 1948, in the Board Room of the American Medical Association Building in Chicago. Members and guests present were:

Dr. Donald G. Anderson, (A. M. A. Council on Medical Education and Hospitals)
Brig. Gen. George E. Armstrong (Office of the Surgeon General, U. S. Army)
Dr. Walter L. Bierring (Federation of State Medical Boards)
Mr. George W. Cooley (A. M. A. Council on Medical Service)
Mr. P. H. Costello (American Pharmaceutical Association)
Dr. W. Palmer Dearing (U. S. Public Health Service)
Dr. Warren F. Draper, (American Red Cross)
Capt. William E. Eaton (Office of the Surgeon General, U. S. Navy)
Dr. Lester J. Evans (American Medical Association)
Dr. Robert P. Fischelis (American Pharmaceutical Association)
Dr. Elmer L. Henderson (American Medical Association)
Dr. Ernest B. Howard (American Medical Association)
Dr. Ernest E. Irons (American College of Physicians)
Dr. George F. Lull (American Medical Association)
Capt. Frederick L. McDaniel (Bureau of Medicine and Surgery, U. S. Navy)
Dr. J. J. Moore (American Medical Association)
Dr. H. B. Mulholland (A. M. A. Committee on Rural Medical Service)
Dr. Howard C. Naffziger (American College of Surgeons)
Dr. Carl M. Peterson (A. M. A. Council on Industrial Health)
Col. Paul I. Robinson (Office of the Surgeon General, U. S. Army)
Dr. R. L. Sensenich (American Medical Association)
Dr. E. R. Serles (American Pharmaceutical Association)
Dr. H. H. Shoulders (American Medical Association)
Miss Mary E. Switzer (Federal Security Agency)

APPROVAL OF MINUTES OF MARCH 6 MEETING

The minutes of the meeting held on March 6, 1948, were approved after the Chairman had stated that minor corrections received by mail had been made.

NATIONAL HEALTH ASSEMBLY

Dr. Lull, a member of the Executive Committee of the National Health Assembly, reported as follows:

I am just one of a great number of physicians who attended the Assembly. A list of who was there, by organizations, is now being prepared and will be of interest; for instance, it will be found that the Red Cross had 40 representatives in attendance.

The Assembly went off far better than many of us expected it would. Most of my time and that of my associates was spent in the panel on medical care, which was quite heavily loaded with labor leaders of different types. The conduct of the men in this panel was such as to deserve favorable comment. All those who were representing organized medicine were willing to meet with other groups and discuss the problems; they had no fixed ideas. Since the meeting the labor groups have communicated with the Council on Medical Service and have expressed a desire to meet with representatives of the American Medical Association.

There were several interesting occurrences in the lobby: One was that a representative of a labor group said, "Why should we go out and fight for compulsory health insurance, for which we would have to pay taxes, when the trend is now for the employer to pay for it anyway?" However, that was not the attitude of the labor leaders in the meeting; they were "all out" for this type of health insurance.

The panel on chronic diseases was presided over by Dr. James R. Miller, an A. M. A. Trustee. Several other panels where there was adequate representation of the medical profession went along very quietly. Mr. Ewing said he was not going to be bound by anything; that he was going to report to the President, and that he would draw up the ten year plan the President had requested regardless of what anyone else thought.

A notice was circulated from the *Mid-Month Survey* that the plan would be published this month. Dr. Fishbein contacted Mr. Ewing, who said that when it was released it would be released to all publications at the same time. The Executive Committee is to meet on June 28, after Mr. Ewing has reported to the President. Just what his report will be we do not yet know.

It was Miss Switzer's belief that of all the panels of the Assembly, the one on chronic diseases may have the most influence in devising a plan for the future. Dr. Mulholland thought that in the meetings of the Rural Health Section the farm groups and the doctors got much closer together in trying to solve some of their problems, realizing that each group had something to offer the other. Drs. Bierring and Mulholland

spoke of discussions in the Rural Health Section wherein the farm groups were vociferous in demanding that there be more medical schools, and Dr. Dearing said that the whole group of rural people are worked up about their inability to get as much service as they think they need. It was Dr. Bierring's opinion that the discussions in the Section on Environmental Sanitation were very constructive.

NATIONAL CONFERENCE ON FAMILY LIFE

Miss Switzer presented the following report:

The National Conference on Family Life took place at the end of the week in which the National Health Assembly was held, and it was not possible for me to attend very many of the sessions. No recommendations, as such, came out of the Conference except a plea to work together to improve family life in general. On the whole, the background material sent ahead of time to the participants seemed to please them. Most of the time of the section on medical care was spent in editing the advance material, which, generally, seems to have been found useful by the educational groups. Most of the publicity given the Conference was concerned with the discussions in the section on sterility. The Conference was an experiment. If its proceedings are circulated widely, attention will be focused on certain problems that will give community groups something for which to work. It was well worth while, and nothing radical or revolutionary came out of it; it was a constructive move.

BIPARTISAN COMMITTEE ON REORGANIZATION OF FEDERAL AGENCIES

Dr. Dearing said: The Public Health Service is a sort of "guinea pig" in this connection. Various studies are being farmed out to nongovernment concerns. An outside group is studying the government service as a career, picking out persons in individual jobs and interviewing them. There are two groups within the Bipartisan Committee that are concerning themselves with the branches of the government having to do with medical affairs; one is that of which Mr. Tracy Voorhees is chairman and the other is the Brookings Institution, which is now responsible for studying public health activities. These two groups are working together to some extent. Then there is a task force on field organization; that is, on the relation of the Government to the states. The organization of the Bipartisan Committee is about as complicated as that of the Government itself.

RURAL MEDICAL SERVICE

Dr. Mulholland presented the following report on the activities of the American Medical Association's Committee on Rural Medical Service:

The employment of a field representative for the Committee on Rural Medical Service was recently authorized, and we are now negotiating with a highly qualified person who can be sent out to explore what is being done in the various states. We think this activity will cause the farm people to feel that we really are trying to do something down to the "grass roots" level.

On June 25 the executive committee of the Council on Medical Service and the executive committee of the Committee on Rural Medical Service are to meet with the cooperative health group here in Chicago. This will be the first of a series of exploratory conferences to find a common ground with the health cooperatives. Similar conferences will be held with labor organizations. We propose to have a meeting in the fall with representatives of farm groups and organizations to bring together with those farm groups all of the state chairmen of the Committee on Rural Medical Service. We feel that our February Congress on Rural Health does not draw in enough doctors on the state level.

Our Committee will have an exhibit at the Chicago Session of the American Medical Association this month, which will be a practical demonstration of what has been and is being done in several states to try to solve the problems of medical service in the rural areas.

Dr. Shoulders asked Dr. Mulholland whether he had observed any trend since the war for physicians to go to small towns and rural areas to practice, which was not the case previously; the reply was that there is such a trend and that the secretary of the Committee on Rural Medical Service, had stated that there is no difficulty in getting a doctor to go into a community of 1,000 persons where there are good facilities for practice.

In response to a question by the Chairman whether or not the people in all these small communities actually need a physician, Dr. Mulholland said, "They think they do," and also stated that the Committee on Rural Medical Service is attempting to make an up-to-date compilation of actually needy areas.

Chairman Irons spoke as follows:

I am much impressed with the trend of discussions in this country as illustrated by the reports on the National Health Assembly, the National Conference on Family Life, the Bipartisan Committee, and so on. All of this, it seems to me, is a voluntary attempt on the part of those who have done some thinking on the subject to improve the technic of living together. It has to do with the social motivations which underlie practically everything we do. Divergence of opinion lies not in the desirability of our relations with each other or our methods of doing things but in the methods of cure of the faults we discover. That has been true throughout history. The faults of social living together, the results of invention drawing people together in larger and larger communities and the fact that rising standards of living introduce continually new problems and new things for people to want all are combined in what might be called social motivations, which underlie not only medicine but all social relations. The difficulty is not that we do not recognize the necessity of alleviating social injustice but that we do not agree on the method of cure. What we physicians have in mind is to prevent, if possible, the introduction of methods of cure that have always failed throughout all history. The fact that we freely and openly discuss all these diverse questions here is an encouraging feature of the national thinking.

HOSPITAL SURVEY AND CONSTRUCTION PROGRAM

Dr. Dearing reported as follows:

At present the Hospital Survey and Construction Act provides that if a state has not enacted provisions for establishing and enforcing minimum standards of operation by July 1, 1948, such state will become eligible for further participation in the program. A Bill provides that passage of provisions for enforcement of minimum standards of maintenance and operation, after the July 1, 1948, deadline, will reinstate such state to eligibility for a federal allotment in the Hospital Survey and Construction Program. This bill passed the House on May 18 and was referred to the Senate Committee on Labor and Public Welfare. There has been no further action on it. Only one state is not under the wire.

Four states, Delaware, Nevada, Rhode Island and Wyoming, have not yet submitted state plans.

The number of projects approved and the cost involved are:

	No.	Total Cost	Federal Share
Initial applications approved.....	285	\$131,385,812	\$37,935,201
Complete applications approved....	34	13,610,851	4,039,268
Totals	319	\$144,996,663	\$41,974,469
Distribution of projects by type of facility:			
General hospitals.....			226
Mental hospitals.....			22
Tuberculosis hospitals.....			16
Chronic disease hospitals.....			4
Health centers.....			45
Other (nurses' home, lab., etc.).....			6
Total.....			319

Analysis of approved general hospital projects:

Forty-three per cent of the total number of applications approved represent projects in towns having a population under 2,500. Eighty-two per cent of the total applications approved are for projects in towns under 10,000 population. Ten per cent of the applications approved represent projects of 100 beds or over. The average is approximately 50 beds. Seventy-five per cent of the hospital projects are located in areas designated as "rural" by state agencies. Sixty-three per cent of the approved projects are located in "A" priority areas.

Payments of federal funds:

Roanoke-Chowan General Hospital, Ahoskie, N. C....	\$12,806.30
Suwannee County General Hospital, Live Oak, Fla....	28,275.90
Duval County Hospital, Jacksonville, Fla.....	70,828.01
Jefferson County Health Center, Birmingham, Ala....	156,681.03
Number of Payments—4, totaling.....	\$268,591.24

A UNIFORM PHARMACY PRACTICE ACT

The following progress report was presented by Dr. Serles:

I would first call your attention to a decision in what is referred to as the Sullivan Case, which clearly places the responsibility of the physician and the pharmacist in saying that a label on a pharmaceutical product must definitely state that the product can be sold only on prescription. The physician should bear well in mind that he should not suggest to patients that they may purchase a familiarly named item which clearly calls for a prescription. In attempting to protect the patient, medication is the responsibility of the physician and of the pharmacist who conforms in meeting requirements by not offering for sale any items not covered.

Extensive study is being given to the development of a Uniform Pharmacy Practice Act, and a committee will soon present a draft of a statute which can be formally considered by this group.

I should like to enlist the thinking of this Joint Committee on a situation which seems to be developing throughout the country, part of which seems to be a desire to make drugs more readily available to patients. I refer to the practice of writing full directions on pharmaceutical products. In following such a program, the thought is that it gives a fine advantage to the patient, helping him to procure what he needs. The American Pharmaceutical Association would take the very definite stand that preparations which contain potent drugs certainly could not have a single direction printed for all conditions. That is to say, we all know there is not one set of directions for all uses of a product offered on the market.

The discussion of Dr. Serles' statement was as follows:

DR. FISCHLIS: There appears to be a disposition on the part of the patent medicine industry to take advantage of the position of the Food and Drug Administration in this matter, which is that the Administration

leans over backward in trying to show that it is not using the Food, Drug and Cosmetic Act to discourage self medication but is trying to make self medication safe and, to that extent, is insisting that labels contain certain warnings. That, however, presumes some knowledge of medicine on the part of the patient; of course, the patent medicine industry says: "What the Food and Drug Administration has endorsed is the only thing we are putting on the market."

MISS SWITZER: I believe that the integrity of the Food and Drug Administration has been sufficiently established that it might be possible for it to take a little different attitude, and perhaps it ought to revamp its point of view on this. It might be desirable to give some thought in the discussion of the Uniform Pharmacy Practice Act to how the Administration might be brought in and asked to review the situation. The thinking of the Administration is changing in many ways; they recognize that the pioneer days are past and that the primary problem is not policing.

CAPTAIN EATON: Is anything being done or can anything be done to control the tremendous advertising of aspirin, particularly over the radio?

DOCTOR SERLES: The only control would be a crystallized public opinion. Another enormous class of products needing additional control includes the insecticides, fungicides, etc., that are brought into household use. In every store of a certain chain grocery concern you will find a 10 foot counter with a display of every possible pharmaceutical item it can contain.

DR. FISCHLIS: There is another point on which the stand of the pharmaceutical profession has been misunderstood, and that is the matter of channeling all sales of drugs through the pharmacies. The argument against it is that anybody who can make a label or make change ought to be able to sell drug products, but there is a great difference in having these drugs handled by men who have had education in the administration and use of drugs and men who are only merchandizers. The state under its police power regulates the practice of a pharmacy, but there is no such power with respect to a grocery store.

It was moved, seconded and carried, that the Food and Drug Administration be invited to send a representative to the meetings of the Joint Committee.

AMERICAN RED CROSS BLOOD BANK PROGRAM

Dr. Draper presented the following statement:

The National Blood Program has been progressing very successfully and very smoothly. In addition to the six centers mentioned at the last meeting of this committee three new centers have been opened, one at Tucson, Ariz., one at San Jose and one at Los Angeles, Calif. The program is now serving the blood requirements of six or seven million people, which is not a bad record for the first year. There has been no difficulty whatever in getting all of the blood required in the areas served. There has been no complaint or any criticism at all from any of the national blood centers. The physicians and the hospitals have all expressed themselves as being much pleased. For the first time it has been possible to undertake operations requiring a great deal of blood which the surgeons would not have undertaken if the supply had not been satisfactory.

As you know, prior to the National Blood Program, there was a local program of the Red Cross known as a Permissive Program, which was simply an arrangement whereby the local Red Cross chapter entered into an agreement with the local medical society under which the chapter agreed to recruit donors. Roughly, some 35 communities are operating on this Permissive Program. It is not ideal but has to be kept on until the national program can catch up and absorb it. Criticisms that do occur come from these diverse local programs, and now and then some Red Cross chapter does some unfortunate thing which ought not to have been done. The Red Cross can not apply the iron fist to prevent difficulties from sometimes happening.

The Red Cross approached this matter in the very finest way it could and received the approval, in principle, of the American Medical Association and the approval of other national agencies. It is inconceivable that the program could be defeated now. Furthermore a situation of national emergency may be developing. The Red Cross certainly is not going to give up its program; it would have to go before the public.

The committee which was authorized by the House of Delegates of the American Medical Association to study the Red Cross Blood Bank Program has formulated its report, which was published in THE JOURNAL for May 8, 1948. The Red Cross has accepted everything that the House of Delegates has asked it to accept and has played ball straight down the middle of the fairway.

WORLD MEDICAL ASSOCIATION

The following information was presented by Dr. Irons:

The office of the World Medical Association has been established in the building of the New York Academy of Medicine. A meeting of the Council was held in New York during the last week in April. This meeting was very harmonious, quite different from the one in Paris in 1947 when a rather serious time was had with a communistic element which tried to disrupt the organization. The meeting in New York lasted for three days. An Executive Secretary was elected in the person of Dr. Louis H. Bauer of Hempstead, N. Y., who is a member of the Board of Trustees of the American Medical Association and a past president of the Medical Society of the State of New York and is prominent in many other ways in medical affairs in this country. Dr. Bauer has been persuaded to take over his work temporarily and perhaps, if necessary, will later give it his full time.

A meeting of the full Assembly of the World Medical Association had been planned for September in Prague, but after what happened in Czechoslovakia a while ago it was felt that it would not be wise to meet there. It appeared that representatives of two nations would not be welcome in Czechoslovakia, so the meeting was changed to Geneva, Switzerland, and will take place on September 5, 6 and 7, 1948.

The Council meeting in New York was quite interesting. The member from Czechoslovakia not only brought invitations for the officers and

Council to bring the Assembly to that country but also announced that the government would entertain the Council at some resort for two weeks with all expenses paid. Following the New York meeting, the Council was entertained by a number of universities, visited American Medical Association headquarters in Chicago and spent about a week in Rochester, Minn. The members from foreign countries were presented with Honorary Fellowships in Alpha Omega Alpha while they were in Chicago. The World Medical Association seems to be well on its way.

To back up the World Medical Association the United States Committee has been formed, the funds for which are coming from contributions from the larger medical organizations, the pharmaceutical industry and individuals. Contributions of \$10,000 have been received from several, and there are also \$10.00 contributions from Founder Members. The United States Committee has undertaken to finance the World Medical Association for five years. It is a big undertaking, but it is felt that it can be done with the support of the medical profession and the pharmaceutical industry.

Dr. Henderson said that each nation has two delegates in the General Assembly and that he and Dr. Sensenich will represent the American Medical Association as delegates to the meeting in Geneva. He added that forty-nine different nations were represented at the meeting in Paris last year.

WORLD HEALTH ORGANIZATION

Miss Switzer commented on the World Health Organization (U.N.) which is to have an assembly in Geneva this month—June 1948—saying that it now appears that the United States will send a delegation. The constitution of the World Health Organization stipulates that preferably the head of the delegation shall be the chief health officer of the government, and it now seems certain that Dr. Thomas Parran will fill that place.

CAREER GUIDANCE AND CLASSIFICATION OF ARMY MEDICAL OFFICERS

Following is an abstract of a statement presented by Colonel Robinson:

For the past three or four years the Surgeon General of the Army has been working on improving methods of personnel management in the medical department. The work thus far accomplished can be divided into three general headings: (1) classification methods; (2) career patterns; (3) management control system.

I want to emphasize that career patterns are in existence for every specialty now utilized in the practice of medicine in the Army.

The Army is now fully prepared to determine its requirements by specialty and by qualifications within the specialty for all medical officers. It is expected that within a relatively short time we shall be able to do this for all Corps within the medical department. Both our procurement program and our training program are now geared to the Career Management System. It is being projected into our Reserve Corps. In order that this knowledge may be utilized to prevent wastage of personnel in future emergencies, it is thought that a like classification scheme should be more universally adopted within the profession. This classification system can be readily adapted to the profession as a whole or any designated part of it (for example, any age group). It is thought that this system is the greatest single contribution to efficient utilization of medical personnel, both in peace and in war, that has yet been conceived.

Dr. Dearing stated that the Public Health Service concurs absolutely with Colonel Robinson's final statement and thinks this is the finest job of working out a plan and system that ever has been done; it is completely applicable to the work of the Service, which is taking steps to adopt it as rapidly as possible with some small differences in the major breakdown. He added: The timeliness of this plan in connection with the work that the National Security Resources Board is undertaking is interesting; professional organizations are being asked to consider the problem of compiling and keeping up a roster of physicians in the country according to a uniform classification system which would be agreed to by the profession and the Government, and certainly this plan is made to order for implementing that program.

Miss Switzer asked how soon it could be determined which line of medical practice an officer will undertake and at what point the potentialities are reviewed and decision made that he shall become a specialist. Colonel Robinson's answer was: At present the individual desires of the officer and the fact that he makes good himself prevail; however, our next project is to contrive some plan whereby we can determine by a scientific method the individual's adaptability; it is intended always in this system that the individual's desire shall be the predominant factor.

At a recent meeting in Washington where a Civil Defense plan was discussed it was proposed that the same kind of rating system described by Colonel Robinson might be applied to the

whole medical profession so that the record of each physician would bear his rating number. Dr. Sensenich doubted the practicability of any agency's putting itself in a position to attach a number to a physician in civil life regardless of whether the system might seem useful. The Chairman agreed with Dr. Sensenich.

STATEMENTS FROM LIAISON MEMBERS

Dr. Evans in referring to the discussion on the National Health Assembly stated: I sat through three days of the Rural Health Panel, and I have never heard such fine talks. The progress made over the years has been phenomenal, and most gratifying are the attitudes exhibited, as well as the fact that people seem to think that it will open up and make more free the relationships between the people who are concerned with health.

Dr. Bierring informed the Committee that another specialty board is on the way, to be called the American Board of Preventive Medicine and Public Health Physicians. It is to consist of nine members, three from the American Public Health Association, three from the Section on Preventive and Industrial Medicine and Public Health of the American Medical Association, one from the Southern Medical Association, one from the Canadian Public Health Association, and one from the group of university schools of public health. First steps were taken in February. It is to meet the need of the physicians engaged now and in the future in a full time career in preventive medicine and public health.

Dr. Bierring stated: A matter that still is of considerable concern to licensing bodies is the problem of recognition and licensure of graduates of the two unrecognized medical schools in this country. One, of course, is now out of existence, but its graduates are applying for license in other states. Many of them have completed internships and residencies and some have had military service; perhaps these may be eligible for license. The question is whether these graduates by subsequent study and experience may have acquired sufficient ability to warrant licensing them.

Captain Eaton presented for the Committee's official records a transcript of discussions in a symposium conducted in the Office of the Surgeon General of the Navy in May to which all senior medical officers were called.

Captain McDaniel gave the following report:

The Navy Department has 180 interns, graduates of medical schools since February 1948, who have accepted appointment for Naval internship for the years 1948 and 1949 in Naval hospitals. During the years 1947 and 1948, the Navy had 71 interns in its hospitals.

In addition to this number of interns for Naval hospitals, arrangements are being firming up whereby approximately 100 interns will be placed in civilian institutions. These interns will be members of the Naval Reserve by voluntary enrolment. They will be reserve officers in fact and will receive all pay and allowances of a lieutenant (junior grade) of the Navy, including the \$100 per month additional pay now allowed medical officers in accordance with Public Law 365, 80th Congress.

It should be pointed out that these additional 100 interns will serve in civilian institutions and therefore will not be an additional drain from the civilian institutions.

REPRESENTATION FROM VETERANS ADMINISTRATION AND AMERICAN DENTAL ASSOCIATION

The Chairman brought to the attention of the Committee the fact that no representative from the Veterans Administration or the American Dental Association had been present at Committee meetings for some time. The Committee requested the Chairman to communicate with the Dental Association and the Veterans Administration, emphasizing the desire of the members that there be a renewal of attendance.

REPORT TO HOUSE OF DELEGATES OF AMERICAN MEDICAL ASSOCIATION

It was moved by Dr. Henderson, seconded by Dr. Sensenich, and carried, that the Chairman prepare a report of the past year's activity for presentation to the House of Delegates of the American Medical Association at its meeting in Chicago on June 21 to 25.

NEXT MEETING

The Joint Committee decided to hold its next meeting at American Medical Association headquarters in Chicago at 9:30 a. m., Saturday, Sept. 25, 1948.

The meeting adjourned at 12:50 p. m.

GOVERNMENT SERVICES

ARMY

INSTITUTE FOR PSYCHOTHERAPEUTIC MEDICINE

As part of the Medical Department's program of close cooperation and consultation with civilian doctors, courses in psychotherapeutic medicine were held simultaneously for two weeks beginning September 6 at the Walter Reed General Hospital, Washington, D. C., Letterman General Hospital, San Francisco, and Fitzsimons General Hospital, Denver. Among the ten specialists participating in the course given at the Walter Reed General Hospital were Drs. Thomas A. Loftus, New York; Charlotte Babcock, Chicago; Meyer A. Zeligs, San Francisco; Jacques S. Gottlieb, Iowa City, and Bernard C. Glueck Jr., Ossining, N. Y.

BENEFITS FOR ARMY NURSES

Nurses newly commissioned in the Army Nurse Corps Reserve who have not had prior military experience and who request and accept extended active duty will be given an allowance of \$250 to cover the cost of initial purchase of uniforms. Extended active duty means that the reserve nurse agrees to serve in an Army hospital for not less than one year. Reserve nurses enrolled in the extension courses now available through the Medical Field Service School will earn credit hours for the courses completed, and these hours will count toward eligibility for promotion and retirement. This applies to all reserve nurses regardless of whether or not they have requested and/or accepted

extended active duty. Six complete extension course series are now available for Army Nurse Corps Reserve officers up through the grade of major. Information may be obtained from the Department of Extension Courses, Medical Field Service School, Fort Sam Houston, Texas.

CIVILIAN SPECIALISTS ELIGIBLE FOR RESERVE COMMISSIONS

The Department of the Army announces that civilian specialists in any of seventy-six broadly defined professional and technical specialties may be tendered commissions ranging from second lieutenant to colonel if they apply and qualify. The applicants must be at least 21 years of age and not more than 55. No previous military experience is required. All must be citizens of the United States. In the list of specialties essential to the needs of the Army are, among others, medicine, nursing, nutrition, pharmacy, biochemistry, bacteriology, parasitology, optometry, serology, toxicology and industrial hygiene.

LIBRARIANS WANTED

The Army Medical Library is in need of librarians with medical training or experience, also cataloging experience and foreign language qualifications. For details, write to the Personnel Officer, Army Medical Library, 7th and Independence Avenue, S. W., Washington 25, D. C.

PUBLIC HEALTH SERVICE

NATIONAL ADVISORY HEART COUNCIL

In accordance with the National Heart Act of June 16, 1948, the Surgeon General has appointed the following twelve members of the National Advisory Heart Council:

Dr. Paul D. White, Boston, who will serve as executive chairman of the council.

Dr. C. A. Elvehjem, Madison, Wis., dean of graduate schools, University of Wisconsin.

Dr. Tinsley Harrison, Dallas, Texas, professor of internal medicine, Southwestern Medical College.

Dr. Irvine H. Page, Cleveland, Ohio, director of research, Cleveland Clinic Foundation.

Dr. Burrell O. Raulston, Los Angeles, dean, University of Southern California Medical School.

Dr. T. Duckett Jones, New York, medical director, Helen Hay Whitney Foundation.

Mr. James S. Adams, New York, director, American Cancer Society.

Mr. Maurice Goldblatt, Chicago, president, University of Chicago Cancer Research Foundation.

Mrs. Albert D. Lasker, New York, co-founder, Albert and Mary Lasker Foundation for education and medical research.

Mr. E. B. MacNaughton, Portland, trustee, Good Samaritan Hospital, Portland.

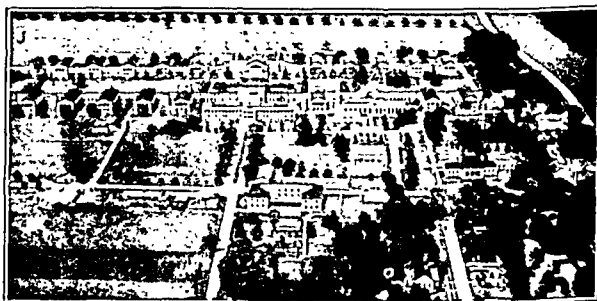
Mr. Ernst Mahler, Neenah, Wis., executive vice president, Kimberly-Clark Corporation.

Mr. Albert J. Wolf, New Orleans, president, board of trustees, Touro Infirmary, New Orleans.

The law requires that six of the members of the council be outstanding experts in the study, diagnosis and treatment of heart diseases. The duties of the council are to advise with the National Heart Institute in developing research programs to help in the attack on cardiovascular diseases; to make recommendations to the Surgeon General on applications of institutions or individuals for research and training grants; to make a worldwide collection of information on research in heart diseases; and to advise on the entire program of the National Heart Institute for controlling cardiovascular diseases. The first meeting of the council was held September 8 at the National Institute of Health, Bethesda, Md.

NATIONAL HOSPITAL FOR TREATMENT OF HANSEN'S DISEASE

The picture is that of the United States Marine Hospital at Carville, La., which is the only institution in the United States devoted exclusively to the care of patients with Hansen's disease (leprosy). This hospital was formerly a Louisiana state hospital but was taken over by the federal government in 1921 and its facilities made available to any citizen of the United States. All building have been replaced by modern fire-resistant structures, and the hospital has a class A rating. There are no charges to patients, and it is the object of the



U. S. Marine Hospital, Carville, La.

Public Health Service which administers this hospital to encourage the greatest liberty to the patient compatible with the accomplishment of the purposes of the hospital. There is a broad field of activities including sports and other recreations for patients, and a monthly publication, *The Star*, published by the patients. The average daily census according to our latest figures was 379. Active treatment is carried on with the newer drugs. During 1946, 43 patients were discharged from this hospital.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Cloyd, Walter L.....Tarrant
Fowlkes, Thomas C.....Selma
Gewin, Henry M.....Mobile
Harris, Robert O. III.....Mobile
Mills, Clarence W. Jr.....Fairfield

Arizona

Jameson, Sam G.....Mangolia
Millett, Douglas K.....Mesa
Stapley, Lorel A. Jr.....Phoenix

California

Bayless, Allan E.....Los Angeles
Bonar, Samuel C.....Upland
Ellis, John F.....San Francisco
Lambert, Richard G.....San Francisco
Loring, Theodore W.....Palo Alto
Medefind, John N.....Fresno
Moore, William H. Jr.....Bakersfield
Mortensen, J. D.....Los Angeles
Schaffner, Marlowe H.....Los Angeles
Scott, Wirt S. Jr.....San Francisco
Stewart, James J.....San Marino
Williams, Robert E.....Glendale

Colorado

Stewart, Robert J.....Denver

District of Columbia

Harris, Lester F.....Washington
St. John, Joseph H.....Washington

Florida

Lindau, Warren.....Miami Beach
McCallister, Archie.....Tallahassee

Georgia

Bell, Ira E. Jr.....Middleton
Black, Grady E.....Valdosta
Brackett, John G.....East Point
Hicks, Wright G.....Roberta
Luke, Chester K.....Atlanta
Thoroughman, James C.....Atlanta
Van Sant, Thomas J. Jr.....Woodstock

Idaho

Murphy, Jack Tullus.....Rupert
Smith, Dale H.....Idaho Falls

Illinois

Altman, George L.....Chicago
Atkins, Robert A.....Sumner
Bernstein, Lionel M.....Chicago
Case, John B.....Chicago
Edwards, Howard M. Jr.....Dixon
Elliott, Thomas A.....Chicago
Giannasi, Louis N.....Chicago
Gordon, Archer S.....Aurora
Hobson, Edwin R.....Gillespie
Kendall, Edward A. Jr.....Granite City
Long, John S.....Pontiac
Milos, Robert J.....Chicago
Munson, Thomas Arndt.....Metcalfe
Muraskas, Edward B.....Chicago
Murphy, Joseph W.....Park Ridge
Petrone, Gerald J.....Chicago
Phares, Walter S.....Chicago
Pliz, Clifford G.....Chicago
Quilty, Thomas J.....Moline
Richmond, Thomas E.....St. Charles
Simon, Arnold B.....Chicago
Springer, Donald W.....Oak Park
Strueh, Paul E.....Chicago
Wilson, William C.....Glen Ellyn
Wolfe, Gordon F.....Elgin
Young, William H. Jr.....Elgin

Indiana

Carter, Fred S.....Hammond
Harger, Robert W.....Indianapolis
Klotz, Joseph G.....Noblesville

Indiana—Continued

Mendez, Fernando L. Jr.....South Bend
Saint, William K.....Newcastle
Squire, Robert M.....Lyons
Van Kirk, Paul P.....Frankfort

Iowa

Goodwin, Laurence D.....Iowa City
Green, Robert P.....Marshalltown
Kardon, Harold E.....Des Moines
Kaskie, Clifford R.....Des Moines
Penly, Richard S.....South Newton
Skelley, Paul B.....Clinton
Weston, Robert A. Jr.....Des Moines

Kansas

Batty, James J.....Kansas City
Dlabal, Frank A.....Wilson
Kidder, Lewis A.....Pittsburg
McAuley, Arthur A.....Kansas City
Nelson, Theodore A.....Phillipsburg

Kentucky

Cahoon, Reynolds F.....Louisville
Cloyd, William H.....Lexington
Combs, Gene N.....Langley
Doyle, George F.....Winchester
Haynes, Allan L.....Louisville
Jarvis, Richard B.....Louisville
Ploetner, Edward J.....Louisville
Stubblefield, Robert J.....Murray

Maine

Lockhart, Philip B.....Pemaquid

Maryland

Canter, Nathan.....Baltimore
Jones, Philip E.....Rock Hall
Klinefelter, Harry F. Jr.....Baltimore
Rudo, Marvin.....Baltimore
Stedem, Anthony F.....Baltimore
Thompson, LeRoy K.....Hyattsville

Massachusetts

Bradford, Martin L.....Sharon
Carey, Edward G.....Boston
Lamothe, Paul A.....Arlington
Levin, Melvin H.....Winthrop
Lowry, Paul Thorpe.....Cambridge
McGowan, John A. Jr.....Medford
MacPherson, Donald H.....Quincy
Meilman, Edward.....Roxbury
Metcalfe, William.....Roxbury
Paushter, Matthew H.....Springfield
Sweeney, Guy R.....Medford

Michigan

Flieder, Charles R.....Grosse Pointe
Frayer, William C.....Ann Arbor
Ketchum, Hall.....Muskegon Hgts.
Maltzer, Joseph H.....Detroit
Mazur, Theodore T.....Detroit
Mount, Frank W.....Royal Oak
Posthuma, Albert E.....Grand Rapids
Richey, Bert R.....Detroit
Talso, Peter J.....Ishpeming
Turner, John J. Jr.....Highland Park
Woodward, Sheldon C.....Flint

Minnesota

Ballinger, Carter M.....Stillwater
Breneman, James C.....Sherburn
DuBois, Julian F. Jr.....Sauk Centre
Karon, Allan B.....St. Paul
Kucera, William J.....Minneapolis
Mazzitello, William F.....St. Paul
Mundahl, Harold R.....Fairfax
Nelmark, Donald R.....Virginia
Parks, Raymond E.....St. Paul
Petersen, William Earl.....St. Paul
Rynda, Edwin R.....New Prague

Missouri

Conrad, Marshall B.....Webster Groves
Dietrich, Alfred G.....Kansas City
Petzold, Howard V.....Joplin

Montana

Murphy, James E.....Whitefish

Nebraska

Davies, Louis T.....Omaha

New Jersey

Bornstein, Leo A.....Jersey City
Carmona, Manuel G.....Tuckerton
Dalrymple, Robert M.....Morristown
Durham, Frederick W.....Camden
Garrett, Thomas A.....Jersey City
Kerr, Andrew D. Jr.....Clifton
Longley, Stephen B.....Madison
O'Connor, Thomas W.....Westfield
Rothfeld, Benjamin.....Newark
Santo, Ralph Verrei.....Newark
Selvage, Irving L. Jr.....South Orange
Skiansky, Morris A.....Bloomfield
Vanderbush, Edward F.....Hewitt

New Mexico

Shy, George M.....Albuquerque

New York

Ackermann, Kurt.....New York
Argentieri, Mario A.....Hornell
Barron, Leonard J.....New York
Berg, Seymour.....Bronx
Bloom, Samuel M.....Brooklyn
Cohen, Herbert.....Brooklyn
Cotter, Samuel.....Bronx
Downey, Martin J. Jr.....Buffalo
Gersh, Marvin J.....New York
Gregware, Peter R.....Troy
Herschfus, Jechiel A.....New York
Heslin, Thomas M.....Brooklyn
Hunter, Harry D.....Rochester
Hurwitz, Mervin H.....Richmond Hill
Jameson, John W.....Rochester
Katz, Burton.....Brooklyn
Mahr, Merle M.....New York
Molyneaux, Eva W.....Buffalo
Powers, Samuel R. Jr.....New York
Schortman, Edward F.....New York
Tybring, Gilbert B. Jr.....Endicott
Walsh, Robert J.....New York
Winkelman, Herman.....Scotia

North Carolina

Flower, Arthur H. Jr.....Durham
Harrelson, Rose C. Jr.....Tabor City
McLean, Augustus A. Jr.....Lenoir
McMurry, Avery W.....Shelby
Moore, Edward E.....Biltmore
Murray, E. Cotter.....Roanoke Rapids
Nicholson, Francis.....Durham

Tennessee

Boone, Howard A.....Memphis
Noel, Oscar F.....Nashville
Qualls, Donald M.....Livingston

Utah

Dovey, Edward G.....Salt Lake City
Kartchner, Fred D.....W. Provo

Vermont

Higgins, James F.....Barre

Virginia

Bell, Lewis F.....Valley Pike
Kelly, Frank R. Jr.....Richmond
Miller, Lawrence S.....Bridgewater
St. Clair, Harvey R.....Staunton

England

Miller, Leroy D.....London

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

COLORADO

Postgraduate Courses.—A postgraduate course in public health and preventive medicine, to be sponsored by the Colorado State Medical Society, the University of Colorado School of Medicine, the Colorado State Department of Public Health and the U. S. Public Health Service, will be given at the University of Colorado Medical Center, Denver, October 18-21. The course has been designed to cover in practical fashion the fundamentals of communicable disease control. Although designed primarily for general practitioners in rural areas, the course is open to all physicians. —A short course for physicians on problems of newborn infants will be given October 14-16 by the University of Colorado School of Medicine and the Colorado State Department of Health, Denver. Lectures, panel discussions and demonstrations will be given by members of the faculty on obstetric aspects of prematurity, resuscitation, isoimmunization, psychologic problems developing in prematurely born infants, community planning, interpretation of laboratory findings in the newborn and parenteral fluid therapy. A registration fee of \$10 is required. Inquiries should be directed to Dr. Frode Jensen, Director of Graduate and Postgraduate Education, University of Colorado Medical Center, Denver.

FLORIDA

Typhus Control in Florida.—The state board of health reports that in those Florida counties carrying out organized typhus measures for 1947 a 46 per cent reduction in reported typhus cases was evident over the previous year. In comparison, there was a 64 per cent increase in the combined number of reported cases from those counties where no organized control work was performed. The number of cases of endemic typhus has increased since it first was officially reported in 1918 to a peak of 484 cases in 1944. The state board of health is concentrating its control program in counties where the greatest number of cases have been reported. Rat-proofing of buildings, distribution of poisoned rat bait, rat trapping, promoting better garbage disposal methods and distribution of DDT dust in and around buildings are being used.

GEORGIA

Greensboro Hospital.—Construction of the Minnie G. Boswell Memorial Hospital, the first hospital to be erected in the state under the provisions of the Hill-Burton Act, was recently begun in Greensboro; it is expected to be completed in ten months.

Postgraduate Course in Medicine and Surgery.—Emory University School of Medicine, Atlanta, in cooperation with the Medical Association of Georgia will present a postgraduate course in medicine and surgery October 11-15. The course is designed to present current ideas concerning the diagnostic and therapeutic problems of general practice and may be used in meeting part of the requirements for membership in the American Academy of General Practice. The registration fee is \$10.

ILLINOIS

Incidence of Infectious Diseases.—Venereal diseases are by far the most widely prevalent communicable infections in Illinois. As of August 14, according to the state health department, 10,564 cases of syphilis had been reported. The morbidity report for the first thirty-two weeks of this year shows a 17 per cent reduction in the incidence of tuberculosis. A total of 4,061 cases have been reported so far this year, as against 4,918 in the 1947 period. Marked reductions have also been noted in the acute diseases of the respiratory tract. Only 90 cases of influenza had been reported, as compared with 1,068 in the same period last year. Whooping cough, with 1,517 cases, was a little more than half as prevalent as last year. Diphtheria declined to 74 cases, and typhoid to 59 cases. There were 41,570 cases of measles reported, as compared with 4,018 cases last year. Mumps, with 9,970 cases, is more than twice as prevalent as last year, and poliomyelitis has been responsible for 230 reported cases of illness as against 124 in the 1947 period.

Chicago

Virus and Rickettsial Diagnostic Tests.—The department of bacteriology at Michael Reese Hospital has introduced routine virus and rickettsial diagnostic tests. This hospital is said to be one of the first in this area to offer these tests on a routine basis.

Illinois Faculty Promotions.—Eight members of the faculty of the University of Illinois College of Medicine have recently received professorial promotions. Dr. Cecil A. Krawker has been promoted to the rank of professor of pathology and will also serve as associate pathologist in the university's 428 bed research and educational hospitals. Dr. Fay H. Squire has been made clinical professor of radiology. The rank of associate professor has been given to Dr. Morton I. Grossman, physiology, and Dr. Georgiana D. Theobald, ophthalmology. Assistant professorships have been awarded to the following: Dr. Matthew J. Brunner, dermatology; Hubert R. Catchpole, Ph.D., physiology; Miss Ruth B. Coleman, A.B., medical illustration, and Dr. Joseph S. Haas, ophthalmology.

INDIANA

Dr. Ross to Head Department.—Dr. Alexander T. Ross, assistant professor of neurology and psychiatry in the Indiana University School of Medicine, Bloomington-Indianapolis, has been named to succeed Dr. David A. Boyd Jr., who has resigned as chairman of the department of neurology and psychiatry. Dr. Ross will become a full time member of the staff with the rank of professor of neurology. Appointment of a professor of psychiatry will be made later. Dr. Boyd, professor of psychiatry and chairman of the department for nearly ten years, resigned to become consultant in psychiatry at the Mayo Clinic, Rochester, Minn., in the development of its psychiatric division. Dr. Ross concluded over four years in the Army Medical Corps with an assignment to the Surgeon General's Office and as chief of the neurology branch, Neuropsychiatry Consultants' Division.

KENTUCKY

State Association Meeting.—The Kentucky State Medical Association will meet at the Netherland Plaza Hotel, Cincinnati, September 27-30, under the presidency of Dr. Guy Aud, of Louisville. Guest speakers include:

Waltman Walters, Rochester, Minn., Peptic Ulcer.
Robert A. Lyon, Cincinnati, Prophylaxis of Recurrent Rheumatic Fever.
Philip Thorek, Chicago, Early Surgical Diagnosis.
Lloyd F. Zacharias, Cincinnati, Evaluation of Breech Deliveries.
Virgil D. Hauenstein, Cincinnati, Cardiac Emergencies.
George F. Lull, Secretary and General Manager, American Medical Association, Chicago.

The oration in surgery will be given Tuesday noon by Dr. Thomas H. Milton, Owensboro, on "Surgery and Its Relation to the Public," and the oration in medicine Wednesday noon by Dr. George W. Pedigo Jr., Louisville, on "The Clinical Evaluation of Edema."

MARYLAND

Extension of Medical Care to Low Income Groups.—A program of free doctors' care for the poor, administered by the Baltimore city health department with the state defraying expenses, has been initiated. At first benefits, including surgery, dentistry and medicine, will be made available to those on the Welfare Department's relief rolls, but the services will be extended to persons who earn a living but cannot afford to pay medical expenses. Physicians cooperating in the setup will receive \$7 a year per patient, regardless of the number of visits made. Services will be given in "medical care clinics" at local hospitals, which receive a flat annual \$10 fee per patient cared for. The program is said to have been evolved by the city's medical profession, and, with the exception of the blanket annual fee, is patterned after the medical care system in effect for three years in the twenty-three counties of the state.

Seminars for Health Officers.—A series of seminars in local health administration will be conducted this year to provide regular opportunity for county health officers to discuss their problems. Meetings will be held quarterly in four districts into which the counties have been grouped: north, west, south and east. In each area the quarterly meeting will be conducted by Dr. Ernest L. Stebbins, director of the Johns Hopkins School of Hygiene and Public Health, Baltimore, and Dr. Allen W. Freeman, Baltimore, consultant in public health administration to the state board of health. The program for each session will be formulated by a health officer designated in advance of the meeting, who will prepare and send to the central office an outline of the problems to be discussed. These seminars will not interfere with the annual and quarterly meetings of health officers, bureau chiefs and other personnel that the state department of health has held in Baltimore over a period of years.

MASSACHUSETTS

Board of Registration in Medicine.—At the annual meeting of the Board of Registration in Medicine held July 13, the following officers were elected for the ensuing year: Dr. Gordon M. Morrison, Boston, chairman, and Dr. George L. Schadt, Springfield, secretary. The other members of the board are as follows: Drs. Anthony O. Cardullo, Robert C. Cochrane and Roger T. Doyle, Boston; Charles E. Donovan, D.O., Salem, and Dr. Bancroft C. Wheeler, Worcester.

Research Professor of Medicine.—Dr. Freddy Homburger, associate in the clinical investigation division at the Sloan-Kettering Institute for Cancer Research, New York, has been appointed research professor of medicine at Tufts College Medical School, Boston, to act as head of the cancer research and cancer control units. Dr. Homburger received his medical degree in Switzerland and before joining the Sloan-Kettering staff held fellowships at Harvard Medical School, Boston, and Yale University School of Medicine, New Haven, Conn.

NEBRASKA

Omaha Mid-West Clinical Society.—The Omaha Mid-West Clinical Society's annual assembly will be held at the Hotel Paxton, Omaha, October 25-29. There will be panel discussions on diabetes, gynecology, adolescence, peptic ulcer, antihistaminic drugs, injuries in automobile accidents and the medical expert witness, and a clinicopathologic conference. Among the guest speakers are Morris Fishbein, Richard B. Capps, Oliver E. Van Alyea and Sumner L. Koch, all of Chicago; Benjamin M. Spock and Paul A. O'Leary, Rochester, Minn.; Paul D. White, Boston; James A. Dickson, Cleveland; A. Earl Walker, Baltimore; Charles L. Martin, Dallas, Texas; D. W. Gordon Murray, Toronto, Canada; Robert A. Kimbrough, Philadelphia, and Steven M. Spencer, Swarthmore, Pa.

NEVADA

State Medical Meeting.—The annual meeting of the Nevada State Medical Association will convene at the Hotel Nevada, Ely, September 24-25, under the presidency of Vinton Muller of Reno. Guest speakers include:

- Robert G. Weaver, Salt Lake City, Urinary Calculi.
- Robert C. Martin, San Francisco, Conditions Commonly Missed in the Ears, Nose and Throat.
- Hyrum R. Reichmann, Salt Lake City, Surgical Conditions of the Anorectum.
- O. George Bates, San Francisco, Pediatric Problems in General Practice.
- Floyd F. Hatch, Salt Lake City, Gastric Surgery.
- Frederick C. Cordes, San Francisco, Emergency Treatment of Eye Injuries.
- Fletcher B. Taylor, Oakland, Calif., Medical Follies of 1947.
- LeRoy C. Abbott and Helen Hagey, San Francisco, Prevention of Deformities in Poliomyelitis.

The council meeting Thursday evening will be addressed by Dr. Joseph C. Buntin, Cheyenne, Wyo. The annual banquet will be Friday evening.

NEW YORK

Regional Diabetes Association.—The Rochester Regional Diabetes Association, has been organized to make the best of medical and nursing care available to all persons with diabetes. The group will function in cooperation with the Rochester Regional Hospital Council with headquarters in the Academy of Medicine. Pamphlets will be distributed and physicians experienced in the treatment of diabetes will be available for lectures and other educational services. Dr. Charles B. F. Gibbs and Dr. H. Raymond Drysdale, both of Rochester, are president and secretary-treasurer, respectively. A board of six physicians will serve as directors of the group.

New York City

Brigadier General Walston to Administer Blood Program.—Brig. General Charles M. Walston, U. S. Army, retired, has been named administrator of the American Red Cross Blood Program of the Greater New York Chapters, 4 East Thirty-Seventh Street. He will direct all phases of the program, which seeks through enrolment of volunteer donors to assure a supply of blood for New York's medical needs. General Walston is a graduate of Jefferson Medical College, Philadelphia, and of the Army Medical School, in 1912. He served in both World Wars.

Survey on Lower East Side.—A survey on the Lower East Side, begun in February 1947 and sponsored by the New York University-Bellevue Medical Center, the New York Heart Association, the city department of health, the Board of Education and the U. S. Public Health Service, showed that 754 children have had rheumatic fever, rheumatic heart disease, congenital heart disease or possible heart disease. Dr. Elvira

DeLee-Burke, research associate in the department of preventive medicine at New York University College of Medicine, is directing the work. Directors of the project plan to extend the survey to the entire city.

OKLAHOMA

Fall Meeting of Clinical Society.—The annual meeting of the Oklahoma City Clinical Society will be held October 25-28 at the Biltmore Hotel, Oklahoma City. The program is made up of a clinical pathologic conference, general assemblies, postgraduate courses, round table luncheons, dinner meetings and commercial exhibits. The registration fee is \$15. Guest lecturers will be Drs. Morris Fishbein and John B. Youmans, Chicago; Jerome W. Conn, Ann Arbor, Mich.; Katharine Dodd, Cincinnati; John G. Downing, Boston; Lawrence S. Fallis, Detroit; Arthur B. Hunt and David G. Pugh, Rochester, Minn.; Rudolph H. Kampmeier, Nashville, Tenn.; Frank R. Lock, Winston-Salem, N. C.; William P. Longmire and Allen F. Voshell, Baltimore; Tracy O. Powell, Los Angeles; Harold G. Scheie, Philadelphia; Theodore E. Walsh, St. Louis; Theodore A. Watters, New Orleans, and Owen W. Wangenstein, Minneapolis. Information may be obtained from the Executive Secretary, 512 Medical Arts Building, Oklahoma City.

OREGON

Bone Tumor Registry.—The pathology department at the University of Oregon Medical School, Portland, with the financial assistance of the American Cancer Society, has established a bone tumor registry, to assemble complete case records including the roentgenograms, pathologic material and follow-up data on bone tumor and other bone diseases; to make such material available for study by any qualified doctor of medicine in the state, and to assist physicians in the diagnosis of unusual or obscure bone lesions. Physicians in Oregon are invited to submit completely worked-up cases for the registry. These will be studied by a board of orthopedists, radiologists and pathologists, and reports returned to the submitting physician as early as possible. Cases requiring additional study will be submitted to the Bone Tumor Registry of the Army Institute of Pathology for further opinion. Physicians and surgeons are invited to utilize the study and consultation facilities at any time. The Bone Tumor Registry of the University of Oregon Medical School will supply data to assist the board of health in maintaining statistical records, and it, in turn, will make available to the university and to physicians of the state information gained through maintenance of the registry.

PENNSYLVANIA

Clinical Pathologists Meeting.—The Pennsylvania Association of Clinical Pathologists will hold its fall meeting at the Bellevue-Stratford Hotel, Philadelphia, October 2-3. Papers to be presented will include:

- A. Parker Hitchens, Philadelphia, the Clinical Pathologist and the Public Health.
- George R. Lacy, Pittsburgh, Survey of the Accuracy of Bacteriologic Examinations in Clinical Laboratories.
- Leandro M. Tocantins, Philadelphia, Bone Marrow Biopsy.

There will also be a round table discussion on the training of residents, with Dr. Samuel R. Haythorn, Pittsburgh, as moderator.

Centennial Celebration of State Medical Society.—The Medical Society of the State of Pennsylvania will observe its centennial at the annual meeting at the Bellevue-Stratford Hotel, Philadelphia, October 3-7, under the presidency of Dr. Elmer Hess, Erie. The scientific program will include symposiums on hematology; the thyroid and radioactive isotopes; three "What's New" programs on medicine, surgery and obstetrics and gynecology, and three clinicopathologic conferences. Guest speakers at the general scientific sessions will be:

- Stewart G. Wolf Jr., New York, Physiologic Mechanisms of Psychosomatic Phenomena.
- Elmer C. Bartels, Boston, An Evaluation of Antithyroid Drugs.
- John M. McLean, New York, Corneal Grafting.
- Charles C. Dennie, Kansas City, Mo., Man Defends Himself.
- Bettina M. Carter, M.S., Pittsburgh, Studies on the Rh Hapten in Relation to Rh Sensitization.
- Bradley L. Coley, New York, Early Diagnosis of Tumors of Bone.
- Roscoe P. Kandle, New York, Public Health Activities in Pennsylvania.
- T. Duckett Jones, New York, Rheumatic Fever and Rheumatic Heart Disease Programs of Care.

The state dinner will be held Monday, and the president's reception Wednesday evening. Besides the technical and scientific exhibit, historical exhibits will show the advancement of medicine. The Woman's Auxiliary will hold its annual meeting beginning October 4 at the Bellevue-Stratford.

VERMONT

Cancer Society Formed.—The Vermont Cancer Society, Inc., was organized last spring as a division of the American Cancer Society under the sponsorship of the Vermont State Medical Society. Dr. Benjamin F. Cook, Rutland, was elected president and Mr. John W. Brownlee, Rutland, secretary. The cancer committee of the Vermont State Medical Society, with Dr. Oscar S. Peterson Jr., Burlington, as chairman, was constituted the medical advisory board of the Vermont Cancer Society.

State Medical Society Meeting.—The annual meeting of the Vermont State Medical Society was held September 15-17 at the Hotel Vermont, Burlington, under the presidency of Dr. Benjamin F. Cook, Rutland. Out of state speakers included:

Richard S. Farr, Syracuse, N. Y., Fractures.

C. Stuart Welch, Boston, Trans-Thoracic Approach for Surgery of the Upper Abdomen.

David S. Grice, Boston, Rationale of Treatment of Acute Poliomyelitis.

Harold T. Hyman, New York, Management of Thrombo-Embolic Disease by the General Practitioner.

Elmer L. Sevringhaus, Nutley, N. J., Use of Endocrines in Functional Bleeding.

At the luncheon meeting on Thursday Dr. Alfred Gellhorn, New York, spoke on "The Red Cross Blood Program." Dr. James R. Miller, Hartford, Conn., trustee, American Medical Association, spoke at the annual banquet on "The World Health Organization, Our Concern in the Health of Other Peoples." Two symposiums were on the program, one on fractured pelvis and another on gastroenterology.

VIRGINIA

Establish Department of Legal Medicine.—A department of legal medicine has been added to the Medical College of Virginia curriculum, effective at the beginning of the school term this year. Under the direction of Dr. Herbert S. Breyfogle, Richmond, chief medical examiner of Virginia, the new department will offer courses relating to the collection of scientific evidence for the administration of civil and criminal law and will also engage in research and offer postgraduate work. The first research problem undertaken will be a study of the role of injury in the cause of cancer.

State Medical Meeting.—The Medical Society of Virginia will hold its annual meeting at the John Marshall Hotel, Richmond, October 18-20, under the presidency of Dr. Guy R. Fisher, Staunton. Guest speakers include:

James P. Baker, White Sulphur Springs, W. Va.

Edwin E. Barksdale, Washington, D. C., and George Ellis, Bethesda, Md., Use of the Anti-Histamine Drugs in Dermatology.

Charles S. White, Washington, D. C., Protein Deficiency in Surgical Practice.

Harrison F. Flippin, Philadelphia, Antibiotic and Sulfonamide Therapy.

The banquet will be held Wednesday evening.

GENERAL

Panamerican Convention of Medical Education.—The First Panamerican Convention on Medical Education will be held at the Panamerican Medical Congress in Lima, Peru, December 3-13. The agenda include: (1) report on the status of each respective school of medicine; (2) systems of medical education; (3) the school for postgraduate education; (4) the training and practice of medical specialties, and (5) importance and necessity of research departments.

American Dietetic Association.—The annual meeting of the American Dietetic Association will be held in the Mechanics Building and Hotel Statler, Boston, October 18-22. Sessions will explore results of nutrition research, new methods and technics and progress in community nutrition, diet therapy, food administration and professional education. The program includes a session on new advances in nutrition, another on maternal and child health and two meetings on diet therapy.

Heart Association Employs Fund-Raising Director.—The appointment of Mr. E. J. Ade, technical director for many major war fund drives, as the first fund-raising director of the American Heart Association was announced recently by Dr. Tinsley R. Harrison, president of the association. Mr. Ade will coordinate the activities of national fund-raising committees which are now being established for an expanded 1949 campaign to be climaxed during National Heart Week, beginning next February 14, St. Valentine's Day.

Clinical Congress of Surgeons.—The thirty-fourth Clinical Congress of the American College of Surgeons will be October 18-22, with headquarters at the Biltmore Hotel in Los Angeles. The program of scientific sessions will be supplemented by operative clinics in hospitals, by television and motion pictures, and a four day hospital standardization conference for hospital personnel. Evening symposiums will take up the subjects of cancer, fractures and other traumas, and graduate training in surgery and the surgical specialties. Dr. Clarence M. L.

Crafoord, professor of surgery, Karolinska Mediko-Kirurgiska Institutet, Stockholm, Sweden, will deliver the Third Martin Memorial Lecture Monday evening, on "Some Aspects of the Development of Intrathoracic Surgery." The Annual Fracture Oration will be presented by Dr. Henry C. Marble, Boston, on the following evening.

Grants for Study of Multiple Sclerosis.—The National Multiple Sclerosis Society has made grants totaling \$77,600 to five medical institutions to conduct medical research projects into the causes and control of multiple sclerosis. Included is a fund to establish the second multiple sclerosis research clinic to be financed by the society, opened August 16 at Albany Hospital, Albany, N. Y. The largest grant will go to Tulane University of Louisiana School of Medicine, New Orleans, to finance a three year study of the possible relation between virus infection and the process of demyelination. A grant was voted to the Massachusetts General Hospital, Boston, for a two year project that will be devoted to basic research in myelin degradation and another to Cedars of Lebanon Hospital, Los Angeles, for an investigation into the behavior of the blood-clotting mechanism in multiple sclerosis. The fifth grant was made to the New York University College of Medicine for a study of psychological factors in multiple sclerosis.

Incidence of Poliomyelitis.—According to the U. S. Public Health Service, 1,411 cases of poliomyelitis were reported during the week ending August 28, as compared with 1,312 the previous week. Increases of 10 or more cases in the following named states accounted for an aggregate increase of 110 cases (first figure current week, second figure last week): Minnesota 89, 67; Iowa 57, 37; California 226, 206; Texas 71, 54; Michigan 53, 42; New Jersey 50, 40, and Georgia 18, 8. Decreases of 5 or more cases (an aggregate decrease of 83 cases) were reported in the following states: North Carolina 133, 159; New York 87, 99; Florida 5, 14; Tennessee 18, 28; Kentucky 8, 16; Virginia 31, 38; Ohio 76, 82; Wisconsin 31, 36. The increases listed above and those in a few other states resulted in a net increase of 99 cases over the preceding week. Rhode Island continues to be the only state in which no cases have been reported to date. Cases to date total 11,155, as compared with 10,654 in 1946 and a five year median of 5,239 for the corresponding period.

CORRECTIONS

Treatment of Migraine with Histamine.—In the article by this title in THE JOURNAL, July 24, 1948, the dosage on page 1112, column 1, in the fourteenth line from the bottom, should read 0.7 mg. instead of 0.07 mg.

Address of Dr. R. R. Spencer.—The correct address of the author of the article, "The Meaning of Cancer Research," in THE JOURNAL, Aug. 14, 1948, is Dr. R. R. Spencer, United States Public Health Service, National Institute of Health, Bethesda 14, Md. The address of the author given at the end of this article was that of another physician by the same name residing in Chicago.

Marriages

EDGAR COOPER PERSON JR., New York, to Mrs. Mary Elizabeth Altemus Whitney of Upperville, Va., June 18.

JOSEPH BERNARD SHAPSE, Brooklyn, to Miss Constance Reichert Weiss at West Englewood, N. J., May 30.

THOMAS BENJAMIN JOHNSON, Towanda, Pa., to Miss Ruth Elizabeth Casler of Millbrook, N. Y., June 26.

EDMUND A. STEENBERG, Aurora, Neb., to Miss Patricia MacArthur of Schenectady, N. Y., June 23.

GLENN D. VAN GAASBEEK, Kingston, N. Y., to Miss Evelyn Mae Gerhart at Llanerch, Pa., June 26.

EDWARD FINCH PARSONS, Flushing, N. Y., to Miss Elizabeth Platt Hubbell at Garden City, June 25.

DONALD LLOYD GORDON, New York, to Miss Adlynn McKeel Hartley of Englewood, N. J., May 29.

DONALD WALTER MOLINE, Oakland, Calif., to Miss Jacquelin Lee Sharp of Palo Alto, June 19.

WILLIAM LEWIS HALL to Miss Jo Ann Dillon, both of Columbus, Ohio, May 8.

HARVEY HATCHFIELD, New York, to Miss Judith Lang of Brooklyn, March 20.

BENJAMIN H. OREMLAND to Miss Pauline Turchin, both of Brooklyn, June 27.

Deaths

Guy William Wells * Providence, R. I.; born in Springfield, Pa., July 9, 1891; Cornell University Medical College, New York, 1920; member of the House of Delegates of the American Medical Association from 1934 to 1937, in 1939, 1940, 1946 and 1947; from 1936 to 1941 secretary of the Rhode Island Medical Society and during 1947 president of the Providence Medical Association; served overseas during World War II; specialist certified by the American Board of Internal Medicine; on the courtesy staff of the Roger Williams General Hospital; on the consulting staffs of the Woonsocket (R. I.) Hospital and Miriam Hospital; on the visiting staff of the Pawtucket (R. I.) Memorial Hospital, where he served as chief of the medical staff; on the staffs of the Providence Lying-In Hospital, South County Hospital, Wakefield, Westerly (R. I.) Hospital, the Charles V. Chapin Hospital and the Rhode Island Hospital, where he died June 15, aged 56, of carcinoma of the stomach.

Taliaferro Clark * Medical Director, U. S. Public Health Service, retired, Germantown, Md.; born in The Plains, Fauquier County, Va., May 14, 1867; University of Virginia Department of Medicine, Charlottesville, 1890; entered the U. S. Public Health Service as an assistant surgeon in 1897; at one time supervised immigration, quarantine and related services in the British Isles and continental Europe; appointed medical director, Assistant Surgeon General in 1930 and acted as chief of the venereal disease division until his retirement in 1933; director of the Child Hygiene Investigation in 1915 and the Bureau of Sanitary Service, American Red Cross from 1917 to 1919; member of the International Sanitation Conference in Paris in 1926; delegate to the International Conference on Tropical Medicine at Cairo, Egypt, in 1928; American member of the Office International d'Hygiene Publique; died in the U. S. Marine Hospital, New York, July 3, aged 81.

Edwin Howe Fiske * Brooklyn; born in Baltimore, Jan. 23, 1877; Long Island College Hospital, Brooklyn, 1901; professor of clinical surgery at the Long Island College of Medicine from 1924 to 1935 when he became emeritus professor; formerly clinical professor of surgery at the University and Bellevue Hospital Medical College in New York; served overseas during World War I; a founder and charter member of the American College of Surgeons; consulting surgeon, Bushwick Hospital, Brooklyn, Eastern Long Island Hospital, Greenport, and Mercy Hospital, Hempstead; served as director of surgery and chairman of the medical board at Kings County Hospital, visiting surgeon at the Hospital of the Holy Family, Midwood and Carson C. Peck Memorial Hospital; died June 16, aged 71.

Henry Pelouze de Forest * New York; born in Fulton, N. Y., in 1864; College of Physicians and Surgeons, medical department of Columbia College, New York, 1890; an Affiliate Fellow of the American Medical Association; formerly adjunct professor of obstetrics at the New York Post-Graduate Medical School and Hospital, Columbia University; veteran of the Spanish-American War; served as sanitary inspector for the city health department, police surgeon, chief medical examiner of the Municipal Civil Service Commission and a member of the medical board of the Teachers' Retirement Board; died June 13, aged 83, of carcinoma of the liver.

Henry Andrews Cotton Jr., * Trenton, N. J.; born in Danvers, Mass., Oct. 14, 1907; Johns Hopkins University School of Medicine, Baltimore, 1934; deputy state commissioner of hospitals; interned at the Johns Hopkins Hospital in Baltimore, where he served a residency; formerly resident at Psychopathic Hospital and Jersey City Hospital in Jersey City and the New Jersey State Hospital in Trenton; served overseas during World War II; member of the American Psychiatric Association; died in the Princeton (N. J.) Hospital, June 21, aged 40, of an accidental overdose of sleeping powder.

Owsley Grant * Louisville, Ky.; born in Louisville in 1887; Johns Hopkins University School of Medicine, Baltimore, 1911; clinical professor of urology at the University of Louisville School of Medicine; specialist certified by the American Board of Urology, Inc.; member of the Southern Surgical Association and the American Urological Association; fellow of the American College of Surgeons; affiliated with the Louisville General, Deaconess, Central State, Baptist and Kosair hospitals and the Norton Memorial Infirmary; died July 1, aged 60, of Banti's disease.

John Merlin Alford * Galva, Ill., Hering Medical College, Chicago, 1908; died April 21, aged 61.

Walter Edward Arnold, Tulsa, Okla.; American Medical College, St. Louis, 1909; died May 1, aged 66.

Ulysses S. Bradley, Harris, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1896; died June 21, aged 81, following fracture of the hip.

Charles Brower, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1885; member of the American Medical Association; fellow of the American College of Surgeons; formerly professor of surgery at the University of Nashville Medical Department; served on the staffs of St. Thomas and Nashville General hospitals; died June 24, aged 86, of congestive heart failure.

Robert Ellsworth Brown, Los Angeles; University of Michigan Medical School, Ann Arbor, 1918; served as a medical missionary in China; died May 20, aged 62, of cerebral hemorrhage.

Henry Clay Caldwell, Madison, Wis.; Milwaukee Medical College, 1901; served during World War I; affiliated with the Veteran Administration from 1944 to 1946; died in the Wisconsin General Hospital June 24, aged 73, of cerebrovascular accident and arteriosclerosis.

Richard Henry Carter, Fresno, Calif.; Cooper Medical College, San Francisco, 1895; at one time affiliated with the U. S. Veterans Bureau in San Francisco; served as health officer of Parlier and as assistant county health officer; on the staff of General Hospital of Fresno County; died June 11, aged 77, of heart disease and diabetes mellitus.

John Baptist Casale * Newark, N. J.; Columbia University College of Physicians and Surgeons, New York, 1913; fellow of the International College of Surgeons; president of the medical board and chief of surgery at St. Michael's Hospital; for a short period medical director of the Columbus Hospital; consulting surgeon at American Legion Hospital; died in the Harkness Pavilion of the Presbyterian Medical Center July 8, aged 57, of cirrhosis of the liver.

Weston Percival Chamberlain * Colonel, U. S. Army, retired, Palo Alto, Calif.; Harvard Medical School, Boston, 1897; fellow of the American College of Surgeons; entered the U. S. Army in July 1898; retired June 30, 1935 for disability in line of duty; formerly chief health officer of the Canal Zone; died in Letterman General Hospital, San Francisco, June 7, aged 76, of arteriosclerosis.

Esmond Austin Childs, Long Beach, Calif.; New York Homeopathic Medical College and Flower Hospital, New York, 1909; died in May, aged 67, of coronary thrombosis.

Charles E. Cole * Jacksonville, Ill.; Northwestern University Medical School, Chicago, 1903; veteran of the Spanish-American War; member of the board of the Morgan County Anti-Tuberculosis League; affiliated with Morgan County Tuberculosis Sanatorium "Oaklawn"; died in the Passavant Memorial Hospital May 17, aged 68, of a hip fracture received in a fall.

Metta Viola Collins, Springfield, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; died June 2, aged 82, of bronchopneumonia and arteriosclerotic heart disease.

William John Crotty * East St. Louis, Ill.; St. Louis University School of Medicine, 1919; past president of St. Clair County Medical Society; on the staffs of St. Mary's and Christian Welfare hospitals; president of the State Savings and Loan Association and director of the Southern Illinois National Bank; died May 22, aged 54, of coronary thrombosis.

Ernest Crutcher, Los Angeles; Vanderbilt University School of Medicine, Nashville, Tenn., 1879; died June 1, aged 90, of carcinoma of the prostate.

Edward Cunat, Chicago; Rush Medical College, Chicago, 1900; fell from the fifth floor window of the Presbyterian Hospital April 21, aged 71.

Michael Henry Dalton, St. Louis; Tufts College Medical School, Boston, 1898; member of the American Medical Association; died May 31, aged 80, of cerebral hemorrhage.

Joseph Paul Davis Jr., Turlock, Calif.; University of Oklahoma School of Medicine, Oklahoma City, 1942; member of the American Medical Association; interned at the General Hospital of Fresno County, Fresno; died May 20, aged 33.

Henry Harrison Deen, Leavenworth, Ind.; Hospital College of Medicine, Louisville, Ky., 1906; member of the American Medical Association; county health officer; served during World War I; major, medical reserve corps, U. S. Army; died May 29, aged 72.

William Charles Ehmke, Willow River, Minn.; Minneapolis College of Physicians and Surgeons, 1906; served as mayor and president of the school board; on the staff of the Moose Lake (Minn.) Community Hospital; died May 9, aged 67, of cerebral hemorrhage.

Bruce Bilo Everall, Monona, Iowa; Drake University Medical Department, Des Moines, 1901; member of the American Medical Association; served during World War I; died May 7, aged 69, of coronary thrombosis.

Charles Flett, Milbank, S. D.; Rush Medical College, Chicago, 1895; member of the American Medical Association; for many years member of the county board of health and school board; on the staff of St. Bernard's Providence Hospital; died May 22, aged 82, of uremia.

Penelope McNaughton Flett, Belmont, Mass.; University of Michigan Medical School, Ann Arbor, 1896; served as school physician; died May 3, aged 85, of arteriosclerotic heart disease.

John Francis Hamilton, Ohio; Miami Medical College, Cincinnati, 1889; died May 25, aged 86.

Francis Augustus Georger, Warrenton, Va.; University of Buffalo School of Medicine, 1913; served during World War I; died May 12, aged 64, of cerebral hemorrhage.

William M. Goodson Panama City, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; died May 27, aged 54, of coronary thrombosis.

George Henry Griffin, Greensburg, Pa.; Kentucky School of Medicine, Louisville, 1907; served during the Spanish-American War and World War I; on the staff of Westmoreland Hospital; died May 30, aged 69, of carcinoma of the larynx.

Thomas Edward Graham, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1907; also a pharmacist; died May 4, aged 65.

E. L. Green, Carpenter, Miss.; Atlanta Medical College, 1895; died in Vicksburg June 25, aged 80.

William David Harvie, Kansas City, Mo.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1889; at one time health officer of Oshkosh, Wis.; served during World War I; died June 1, aged 83, of bronchopneumonia and hematoma of right thigh.

Alfred Hauptmann, Boston; Universität Heidelberg Medizinische Fakultät, Baden, Germany, 1905; member of the American Medical Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; consultant at the Joseph H. Pratt Diagnostic Hospital; died April 5, aged 66, of coronary occlusion.

Maude Ruhl Hill, Cincinnati; Eclectic Medical Institute, Cincinnati, 1894; died in the Holmes Hospital May 18, aged 76.

Samuel Hirsch, Passaic, N. J.; Baltimore University School of Medicine, 1898; member of the American Medical Association; affiliated with Beth Israel Hospital, where he died May 6, aged 71, of coronary sclerosis and diabetes mellitus.

Leon Willet Hyde, Astoria, Ore.; Rush Medical College, Chicago, 1897; veteran of the Spanish-American War; died May 30, aged 74.

J. Sinkler Irvine, Evinston, Va.; University of Louisville (Ky.) Medical Department, 1891; member of the American Medical Association; died May 30, aged 81.

George Summers Johnson, Nashville, Tenn.; Washington University School of Medicine, St. Louis, 1925; associate professor of surgery at the Vanderbilt University School of Medicine; member of the Southern Society of Clinical Surgeons; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; served in the medical corps of the U. S. Naval Reserve during World War II; affiliated with the Vanderbilt and Veterans Administration hospitals; died May 20, aged 49, of extradural hemorrhage due to a fall.

Oren Guy Johnson, Mayville, Mich.; Detroit College of Medicine, 1905; member of the American Medical Association; served overseas during World War I; formerly state senator, and mayor of the town of Mayville; on the staff of St. Luke's Hospital in Saginaw; at one time superintendent of the American Legion Children's Billet; died May 19, aged 75, of gangrene of right leg, arteriosclerosis and hypertension.

Ernest Kinloch Johnstone, San Francisco; University of California Medical School, San Francisco, 1892; formerly served in the regular army; died in the Franklin Hospital May 23, aged 77.

Henry William Kleinschmit Oshkosh, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1914; died May 19, aged 61.

James Archibald Kleinsmid, Phoenix, Ariz.; Rush Medical College, Chicago, 1899; served during World War I; died May 20, aged 71.

Frank Henry Krebs, Philadelphia; Jefferson Medical College of Philadelphia, 1919; died in St. Mary's Hospital May 30, aged 53.

Cary Devall Langhorne, Upperville, Va.; University of Virginia Department of Medicine, Charlottesville, 1897; at one time an officer in the regular navy; veteran of the Spanish-American War; served in the Philippine Insurrection and received a letter of commendation for heroism in action; received the Congressional Medal of Honor for gallantry in action at Vera Cruz during the American Intervention in Mexico; served during World War I; died April 25, aged 74.

Hilliard Lindley, Hollis, Okla.; Southern Medical College, Atlanta, 1891; died April 28, aged 91.

James Thomas Loomis, Long Beach, Calif.; Chicago Physio-Medical College, 1896; at one time practiced in Toledo, Ohio; died May 24, aged 87, of chronic myocarditis.

Herluf Gyde Lund St. Louis; Washington University School of Medicine, St. Louis, 1907; specialist certified by the American Board of Urology; member of the American Urological Association; affiliated with Lutheran Hospital, where he was chairman of the staff for many years and where he died May 26, aged 65, of multiple abscesses of the kidneys and abscess of the prostate.

Robert James McClure Calumet, Mich.; University of Michigan Medical School, Ann Arbor, 1933; served as secretary of the Houghton-Baraga-Keweenaw Counties Medical Society and the Upper Peninsula Medical Society; formerly assistant in otolaryngology at the Yale University School of Medicine in New Haven, Conn., and assistant resident otolaryngologist at the New Haven Hospital and New Haven Dispensary; killed in a private plane crash at Laurium May 4, aged 40.

John O. McFerrin, Jasper, Ark.; University of Arkansas School of Medicine, Little Rock, 1905; died in Little Rock May 25, aged 76.

John V. McKim, Bowen, Ill.; St. Louis College of Physicians and Surgeons, 1895; associate member of the staff of St. Mary's Hospital in Quincy, where he died May 24, aged 75, of carcinoma of the colon.

Wade Calhoon Mitchell, Los Angeles (registered in Oklahoma to practice medicine in 1909 and licensed in Kansas in 1901); died April 7, aged 66, of chronic myocarditis and arteriosclerosis.

Salvatore Moncada, Belleville, N. J.; Regia Università degli Studi di Padova, Facoltà di Medicina e Chirurgia, Italy, 1917; member of the American Medical Association; died May 22, aged 56.

Forney Long Murray, American Falls, Idaho; University of Oklahoma School of Medicine, Oklahoma City, 1937; served as director of the South Central District Health Unit in Twin Falls; died May 26, aged 42, of coronary thrombosis.

Rudolph Victor Naumann, New York; New York University College of Medicine, New York, 1942; interned at the Bellevue Hospital, where he served a residency; served a residency at New York and Presbyterian hospitals; certified by the National Board of Medical Examiners; died April 1, aged 39.

Russell Roy Noice, Miami, Ariz.; University of Minnesota Medical School, Minneapolis, 1915; served during World War I; at one time practiced in Minneapolis, where he was county physician; died April 15, aged 57.

William Bryant Oldham, New Castle, Ky.; Hospital College of Medicine, Louisville, 1905; member of the American Medical Association; county health officer; died April 23, aged 66.

Odd V. Opheim Sioux Falls, S. D.; Rush Medical College, Chicago, 1914; affiliated with the Sioux Valley and McKennan hospitals; died April 29, aged 62, of acute pulmonary edema.

John Green Pittman Jr., Gaffney, S. C.; Medical College of the State of South Carolina, Charleston, 1929; member of the American Medical Association; served during World Wars I and II; died in a hospital at Lancaster May 26, aged 49.

James Norris Plumb, York, Neb.; Rush Medical College, Chicago, 1891; died May 8, aged 80.

Daniel J. Price Columbus, Ohio; Baltimore Medical College, 1902; died May 8, aged 70.

Samuel Puleston, Sanford, Fla.; University of Maryland School of Medicine, Baltimore, 1902; member of the American Medical Association; died in the Riverside Hospital, Jacksonville, May 28, aged 67, of cardiac hypertrophy and arteriosclerosis.

Ermin Levi Ray, Williamsburg, Mass.; University of Louisville School of Medicine, 1914; served during World War I; affiliated with the Veterans Administration Hospital in Northampton; formerly on the staff of the Veterans Administration Hospital in Lyons, N. J.; died May 21, aged 56, in an airplane accident.

Ralph Clifford Reece, Cincinnati; University of Cincinnati College of Medicine, 1946; interned at the Flower and Fifth Avenue Hospitals in New York and the Cincinnati General Hospital, where he died April 7, aged 26.

Thomas Ludford Rennie, Pell City, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1919; member of the American Medical Association; was burned to death May 8, aged 52.

Charles Henderson Rush, Glendale, Calif.; Cotner University Medical Department, Lincoln, Neb., 1894; died April 24, aged 79, of coronary occlusion.

William Schroeder, Thompson, Iowa; Rush Medical College, Chicago, 1901; died May 29, aged 72, of diabetes mellitus.

Mattie Brown Shaw, Ashland, Ore.; Dalhousie University Faculty of Medicine, Halifax, N. S., Canada, 1897; died April 6, aged 74.

Lewis Mayer Shultz, Port Carbon, Pa.; Medico-Chirurgical College of Philadelphia, 1916; served overseas during World War I; died May 30, aged 54, of uremia.

Henry Franklin Smith, Chattanooga, Tenn.; Memphis Hospital Medical College, 1913; died in the Erlanger Hospital May 2, aged 61, of cerebral embolus.

Arthur A. Snyder, McLean, Va.; University of the City of New York Medical Department, New York, 1882; for many years practiced in Washington, D. C., where he was on the staff

of the Garfield Memorial Hospital; veteran of the Spanish-American War; died May 15, aged 88.

Floyd Rodman Stamp, Alliance, Ohio; Tufts College Medical School, Boston, 1912; member of the American Medical Association; served as county health commissioner for many years; died April 27, aged 66.

John Henry Taylor Jr., Trenton, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1927; on the staff of the New Jersey State Hospital, where he died May 2, aged 46, of acute nephritis.

Victor Clifford Tisdal * Elk City, Okla.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1910; past president of the Oklahoma State Medical Association; veteran of World War I; served as mayor of Elk City and member of the state board of health; formerly owner of the Tisdal Hospital; died in the University Hospital, Oklahoma City, May 18, aged 62, of coronary thrombosis.

Francis Lewis Tribon, Algona, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1893; died May 23, aged 84, of chronic myocarditis.

Luther Brown Turner, Columbus, Ohio; Starling Medical College, Columbus, 1892; on the staff of the Mercy Hospital, where he died April 23, aged 85.

Nellie Smith Vernon, Astoria, Ore.; University of Oregon Medical School, Portland, 1901; served as city and county health officer; died in Portland May 23, aged 80.

KILLED IN ACTION



CAPT. LOUIS COWEN
M. C., A. U. S., 1908-1945



LIEUT. COL. DAN. B. SEARCY
M. C., U. S. Army, 1909-1945



CAPT. ALEXANDER A. ST. CLAIR,
M.C., A.U.S., 1911-1945

Louis Cowen, New York; University of Buffalo School of Medicine, 1935; interned at the Trinity Hospital in Brooklyn; member of the American Medical Association; began active duty as a first lieutenant in the Medical Corps, Army of the United States, in May 1941; promoted to captain; killed in action in Germany March 1, 1945, aged 37.

Dan Beville Searcy * Lieutenant Colonel, M. C., U. S. Army, Lewisville, Ark.; born in Lewisville, Ark., Feb. 12, 1909; Tulane University of Louisiana School of Medicine, New Orleans, 1934; interned at the Shreveport Charity Hospital in Shreveport, La.; commissioned a first lieutenant in the Medical Corps of the U. S. Army on Dec. 1, 1938; transferred to the Air Corps and sent to Carlisle Barracks after graduating from Aviation School of Medicine at Randolph Field, Texas; completed a course for flight surgeons at Walter Reed General Hospital in 1941, was sent to the Philippine area at the fall of Bataan; served in Australia and New Guinea; promoted to lieu-

tenant colonel in December 1942; received the Legion of Merit for services at Del Monte, Mindanao, Philippine Islands, from Dec. 1, 1941 to April 29, 1942; missing in action since Jan. 18, 1943; declared dead as of Dec. 20, 1945, aged 36.

Alexander Armstrong St. Clair, Bluefield, W. Va.; University of Virginia Department of Medicine, Charlottesville, 1936; member of the American Medical Association; interned at the Lankenau Hospital and Children's Hospital of the Mary J. Drexel Home in Philadelphia; later studied surgery in Austria and Hungary; received a certificate from the University of Vienna in the theory and practice of surgery; on the staff of the Bluefield Sanitarium; began active duty as a lieutenant in the medical corps, Army of the United States on Feb. 11, 1941; promoted to captain; reported missing in action since July 13, 1943 on a flight from Mohanbari Air Base, India, to Kunming, China; determined dead Dec. 19, 1945, aged 34.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 4, 1948.

World Federation for Mental Health

The formation of a World Federation for Mental Health to act in close collaboration with the specialized agencies of the United Nations was announced at a session of the International Congress on Mental Health in London. Membership of the federation is open to organizations whose object is the promotion of mental health and human relations. About one hundred and fifty delegates representing forty-two nations and four colonial territories are responsible for its formation. Dr. J. R. Rees, president of the International Commission for Mental Hygiene, was elected first president of the federation, and Dr. André Repond, of Switzerland, vice president. Dr. Rees was neurologic specialist to the Ministry of Pensions and during the war was consulting psychiatrist to the Army. He is a well known writer on psychiatry.

Physicians Elected Fellows of Royal Society

The highest scientific distinction in this country is the Fellowship of the Royal Society, which is awarded only for original important scientific work. In the case of physicians the recipients are generally workers in experimental subjects, such as physiology and biochemistry, and only very eminent clinicians are so honored. The following members of the medical profession have been elected: Dr. R. A. McCance, professor of experimental medicine in the University of Cambridge, for his contributions to metabolic studies in man; Sir Leonard Parsons, emeritus professor of diseases of children in the University of Birmingham, for his studies in child health and the wasting disorders of children; Dr. W. A. H. Rushton, lecturer in physiology in the University of Cambridge, for his researches on the effects of electrical stimuli on muscles and nerves.

The Prevention of Venereal Disease

The latest report of the Ministry of Health shows an increase during 1945 in the incidence of gonorrhea and syphilis. In a letter to the medical press Lord Horder, president of the National Society for the Prevention of Venereal Disease, points out that this has happened in spite of the expenditure of large sums by the government, through the Central Council for Health Education, in telling the public of the dangers of venereal disease, coupled with treatment after the disease has developed. But the public has not been allowed to learn the important fact that much of the disease is easily prevented. During the great wars the fighting services all over the world, owing mainly to the persistent efforts of the society, were protected (more or less, according to the enthusiasm of the officer in charge) against these diseases by the preventive measures which the society has advocated for thirty years. But all the time the civilian population has been kept in ignorance and hence the increase. The policy of the society is threefold: (1) to educate the public with regard to the fact that disease can be prevented by simple scientific measures; (2) to supply details of such measures, and (3) to secure alteration in the law to enable preventive means to be sold with the necessary instructions.

Lord Horder's letter has provoked dissenting replies in the *British Medical Journal*. It is stated that during the war some medical officers, who pressed prophylactic measures by every means at their disposal, were driven to the conclusion that they had not diminished but increased the rate of infection, because such advocacy increased sexual promiscuity. A venereologist of extensive experience in the Army and Navy, and to a less extent in a large civilian clinic, has found prophylactic mea-

asures futile. The secretary of the Association for Moral and Social Hygiene insists that the only sure preventive is chastity and that any propaganda which obscures this fact is likely to increase promiscuity and hence to increase the dissemination of venereal disease. The armed forces have had for many years easy access to prophylactic packets and are instructed in their use; yet the incidence of venereal disease is always a great worry to the authorities. The troops occupying Germany are instructed in prophylaxis; yet the incidence of venereal disease was 185 per thousand in 1947. It is suggested that these troops are largely responsible for the spread of venereal disease in our civil population.

PARIS

(From Our Regular Correspondent)

July 30, 1948.

First International B.C.G. Congress

This Congress, which was held at the Paris Pasteur Institute, under the presidency of Dr. G. Guérin, was attended by delegates from almost every nation. More than one hundred communications were read before the four sections.

To the first section was entrusted the experimental study of B.C.G. and of the methods of its administration. Researches on the preparation of B.C.G. in its dry state have been simultaneously undertaken by Ungar and Muggleton (Great Britain), Rosenthal (United States), Kaiser (Austria) and Bretay (France). By his method for desiccating the vaccine at a low temperature, the latter has obtained a powder of B.C.G. keeping for months the vitality of the germs. Among other things, the preventive action of B.C.G. has been demonstrated by the experimental works of E. Bernard and Kreis, who found that guinea pigs previously vaccinated and superinfected with virulent Koch's bacilli respond better to streptomycin than the nonvaccinated ones. In the second section, dealing with the results of the use of B.C.G. in human beings, various methods of vaccination were discussed: Rosenthal's method (United States) of multiple punctures; Negre and Bretay's one of scarifications, especially used in France, and the intradermal route of Wallgren, preferred in Scandinavian countries. Professor Debre reported that in collaboration with the World Health Organisation and the International Fund for the Relief of Infancy a "pilot station" is being created in Paris for the systematic study of the differences between the various technics of vaccination. This station will also be of use for the instruction of doctors and nurses. The work of the third section concerned the results obtained with B.C.G. in veterinary practice. It has been proved that B.C.G. vaccination on a large scale could largely diminish the extension of tuberculosis in cattle; for instance, in France, where 40 per cent of the cattle are tuberculin positive. The fourth section dealt with the conditions of application of B.C.G. in the field of preventive hygiene. Tonell reported the results of vaccination in a Swedish district of 100,000 inhabitants. Thanks to systematic vaccination in primary and secondary schools (18,000 vaccinations) from 1935 to 1946, no tuberculous meningitis has been observed in this district, and the mortality rate, which was 6 per 10,000 up to 1939, decreased to 2.6 per 10,000 in 1946. As emphasized by Wallgren and Guilbaux, the vaccinated patient must be kept free from contagious contacts for several months in order to realize immunization.

The congress then passed unanimously, among others, the following resolutions: that over ten million vaccinations practiced in the whole world for twenty-five years confirm the absolute innocuity of B.C.G. vaccination in human beings; that B.C.G. vaccination constitutes the most effective means of preventing tuberculosis; that the vaccine B.C.G. strain used in all countries originates from the Paris Pasteur Institute; that the technic confirmed by tests in Paris at the Pasteur Institute insures its vitality; that the congress recommends the introduction of the vaccine through the skin, the modes of applica-

tion of which are varied; that the congress does not exclude the oral administration for practical reasons; that the congress recommends the revaccination of subjects whose cutaneous sensitivity to tuberculin has disappeared; that the congress considers urgent as widespread a diffusion as possible of the B.C.G. vaccination; that the congress recommends the development of all other prophylactic measures employed in the fight against tuberculosis.

TURKEY

(From Our Regular Correspondent)

ANKARA, Aug. 16, 1948.

Streptomycin in Tuberculous Meningitis

Not until the middle of 1947 was it possible to obtain streptomycin for the treatment of tuberculous meningitis. The price was 15 Turkish pounds or \$4.80 for 1 Gm., but within a few months the black market was selling it for \$9.00, and as a result during June and July 1948 no streptomycin was available at the Istanbul, the Izmir or the Ankara pharmacy. During the war years tuberculosis greatly increased; hence the government recently granted \$250,000 for the purchase of American streptomycin. In view of the scarcity of the drug, its distribution is at present under the supervision of the Ministry of Health. Health officers are responsible for its distribution in the provinces.

Prof. Dr. Ihsan Hilmi Alantar of the Istanbul Children's Hospital reports on the use of streptomycin in 19 cases of tuberculous meningitis. All 19 children belonged to well to do parents who had been able to procure the new drug. Eight of the 19 patients were girls and 11 were boys; their ages ranged from 2 to 12 years. In 18 of the patients another form of tuberculosis was concomitant with meningitis. The clinical diagnosis in all 19 patients was verified by the tuberculin test, test of the cerebrospinal fluid, or the inoculation of animals. In all 19 patients the albumin content of the cerebrospinal fluid had risen. The Pandy test elicited a clearly positive reaction, and the lymphocytes ranged from 12 to 640 per cubic millimeter. Löwenstein cultures were positive in 3 cases. Of the 11 animals inoculated 3 contracted tuberculosis. Of the 19 patients some received a total of 15 to 20 and others from 50 to 120 Gm. of streptomycin; several of the latter are still under treatment. The patients received an average daily dosage of 1 Gm. of streptomycin; older children and those with the most serious cases 2 Gm. of streptomycin, this dosage being continued as long as possible. Intramuscularly and intrathecal routes were used; the daily dosage given by the intrathecal route was 0.1 to 1.5 Gm. In several cases the therapy had to be abandoned temporarily because the children could no longer bear the repeated injections, or when complications like severe headaches, vomiting, excitement or insomnia arose. There were intervals of two weeks to more than two months. Edema, redness and swelling at the point of injection appeared in almost all 19 patients, especially in extremely small children, requiring a change of injection point. There were several infiltrations and one sterile abscess; in 3 patients urticaria appeared; no true nephritis was observed, but in 3 cases albuminuria. The streptomycin affected the vision of 11 patients. In many papillary stasis occurred; in 5 of the latter greatly weakened visual perception replaced the papillary stasis, so that in one 18 month old child complete atrophy of the visual nerve occurred. The streptomycin therapy was discontinued and the patient was given a large dosage (3.025 Gm.) of vitamin B₁ injection, and the vision returned. In 1 patient symptoms of mastoiditis developed toward the end of the therapy. In several patients whose condition on admission was grave cerebral paralysis soon developed, and in several others it developed later. Of the 19 patients 5 fully recovered; 2 patients are still under treatment with hope of full recovery, and 12 patients whose condition on admission was very serious did not recover.

BELGIUM

(From Our Regular Correspondent)

Aug. 7, 1948.

Medical Meetings at Brussels

More than five hundred physicians and surgeons of Belgium, France, Great Britain, United States, Switzerland, Holland, Luxemburg, Portugal, Greece, Italy, Czechoslovakia, Iran, Canada and the Dominican Republic convened in Brussels for the twenty-second session.

The success was due to the cooperation of the scientific societies in arranging their meetings to coincide with the medical meetings. There are to be mentioned the International Association of Medical Electronics, the Meetings on Dentistry, the extraordinary session of the Belgian Medical Society on Physical Education and Sports, the extraordinary session of the Belgian Society of Scientific Studies on Tuberculosis and Pneumology, of the Belgium Society Against Rheumatism and the extraordinary session of the Medico-surgical Section of the National Society of the Belgian Railroads.

Among numerous scientific reports presented were the following: Is Intelligence Electronic? by Professor Dacos; Ideas Relating to Physical and Biologic Electronics, by Professor Rylandt, who was inclined to connect his data to chronaxia; Biology of Physical Training, by Professor Pierre Combemale; Special Indications for Streptomycin in the Course of the Treatment of the Tertiary Forms of Pulmonary Tuberculosis in the Adult, by Dr. Jeanneret; The Resuscitation of the Heart, by Professor Mercier Fautoux; Observations on Carcinoma of the Lung, by Dr. C. Price Thomas; The Destructive Effect of Microwaves in Biology: Can They be Employed as War Weapons? by Dr. Victor Tomberg; Recent Progress in Chemotherapy of Cancer, by Dr. Alexander Haddow.

Finally, a conference was held by General Sicé, professor of tropical pathology at the University of Basel. It is said that General Sicé plays an important role in the approach of the Tchad (French colony in the African Sudan) and Equatorial Africa to the Free French Forces. He also assumed the difficult task of sanitary organization of the African campaign for these forces. He spoke on the combat of dehydration and dechloridation as the result of extreme heat.

International Union of Railroad Physicians

The National Society of Belgian Railroads has organized under the auspices of Dr. Huybrechts at a scientific session, during which the medical chiefs of the great networks of France, Holland, Switzerland and England with the Council of Administration prepared the way for an international union of railroad physicians. The following passages are from the paper presented by M. Verbist, Minister of Public Health, who epitomized the tendencies with regard to the organization of medicine in Belgium:

It is with good reason that physicians defend, under all circumstances, liberty of choice and professional secrecy as the essential conditions of the practice of their art. Without liberty of choosing the physician, the nurse and the institution of medico-social care or assistance, there is no longer any truly humane medicine. Our constant care in all regulations which we take is to reconcile the requirements of technique and those of liberty. We are convinced that to ameliorate everywhere the health and well-being is the first and the most important contribution which one can make today to social peace. As long as men and women and children die of hunger in the world or are struck down by disease and destitution all desperation and all catastrophes are possible and civilization is menaced. It is generosity and fraternity between peoples which can save a dangerously troubled world. Efficiently to preserve the health and well-being of human beings is to safeguard peace.

National Exhibit of Physician Artists

The third National Exhibit of physician painters organized by the Circle of Art and Medicine with the collaboration of the Belgian Chemical Society was opened at Brussels. It has been said that this is a curious exhibit of distinguished amateurs. More than twenty painters and sculptors have combined their works in the beautiful rooms of the Artists' Circle of Brussels. Many of these amateurs have shown serious qualities, and it is interesting to see this movement develop year after year.

Council on Medical Service

RÉSUMÉ OF ACTIVITIES OF CONSTITUENT ASSOCIATIONS AND COMPONENT SOCIETIES

A preliminary survey has been made of state association and county society activities which may serve as a basis for compiling more detailed information in the future, particularly on organization activities as they refer to the National Health Program of the American Medical Association.

Constituent Associations

Following is a brief résumé of replies received from 45 of the 53 constituent medical associations, which consist of 48 state medical associations, the District of Columbia and the four territorial medical associations. For the purpose of simplicity, the terms constituent and state are used interchangeably in this résumé.

Committees To Work With Council On Medical Service.—Direct contact with the state medical associations is recognized as a necessity by the Council. In fact, soon after completing its organization, the Council requested each state association to appoint a committee, either new or existing, to work with the Council. These committees were then invited to meet with the Council—usually five or six states meeting together in some central place. In this manner the regional conferences of the Council on Medical Service were started. Their purpose is to learn of the views and problems of the state medical associations and present to them the views and problems of the American Medical Association. Of the 45 state associations answering the questionnaire 31 have committees to work with the Council on Medical Service.

Organization.—The first state medical association to organize formally was the Medical Society of New Jersey (1766); the most recent was the Alaska Territorial Medical Association (1925). Fourteen were organized prior to the formation of the American Medical Association. The number of associations organized during the Civil War period (1851-1875) is greater than during any other twenty-five year period.

A majority (39) of the associations are corporations, incorporated under state or territorial laws. Incorporation has definite advantages for a medical organization, particularly when its activities extend beyond the purely academic field, when it holds or owns property and when it has a sizeable budget and operating personnel.

While almost every state medical association has a house of delegates composed of physicians selected by the component medical societies, to carry out the legislative decisions most associations have a smaller group elected by the house of delegates. The range in the number of members on these governing boards is from 5 to 21, with about one half of the associations (26) having boards of less than 15 members.

All of the 45 associations, excepting Alaska, reported having at least one part time employee; all but 7 have full time employees. A total of 333 persons are on association payrolls, of whom 270 are full time and 63 are part time.

Membership.—Membership in constituent medical associations, except for the territories and the District of Columbia, is dependent on membership in the component county or district medical societies. Physicians do not join either the constituent medical associations or the American Medical Association; they join the county medical society and are "certified" to the state, which, in turn, reports them to the American Medical Association. The 45 state associations answering the questionnaire reported memberships ranging from 43 (Alaska) to 21,786 (New York). Only 13 have less than 1,000 members, while 7 have a membership of more than 5,000.

Annual dues paid by state association members range from \$5 in Mississippi to \$60 in California. In general, however, the dues are rather low compared to other organizations to which physicians belong, a majority being less than \$25 a year. Each state association seems to set its dues to provide sufficient income to meet its own idea of necessary activity. With one exception, the 7 associations with over 5,000 members have

annual budgets of over \$100,000. Those in the 2,500 to 5,000 membership group seem to require a minimum budget of \$50,000 annually. In associations of less than 2,500 members, no general requirement is evident.

Scientific Activities.—In promoting scientific education in the field of medicine, the state associations continue to fulfil their proper function.

As one activity in this field, 36 state medical associations publish scientific journals. In addition, 11 others participate with one or more associations in publishing a journal. In every instance these journals are devoted primarily to scientific medicine, although most of them publish official actions of the association, news notes from the component county societies and papers or items on social medicine.

Of the 45 associations reporting, 34 provide or make postgraduate programs available for their members. Three are organizing or are in the process of organizing postgraduate programs.

Professional and Public Relations.—The state medical associations are recognizing more and more the need for a planned public relations program to explain the achievements of medicine to the public. Twenty-nine associations reported a public relations program in operation, and 3 are in the process of organizing one. Although these are public relations programs, much of the activity is directed toward physicians; to a considerable extent, then, they are also professional relations programs. In fact, several associations are concentrating on contacts with the profession in order to lay the groundwork for future activity in the field of public relations.

The secretaries' conference has been a regular activity of several state associations for many years. More recently, however, the National Conference of County Medical Society Officers has directed an increased attention toward this particular activity. At present 18 state associations sponsor a secretaries' conference, thus indicating a growing awareness of the need for indoctrinating the officers of the component county medical societies.

News letters are becoming popular among the state medical associations. When the Council on Medical Service began publishing its *News Letter* five years ago, only a few state associations were using this medium to keep in touch with their members. Fourteen now publish regular news letters.

A speakers' bureau can be an important activity, bolstering the scientific programs of the county societies as well as serving the public. That this activity has not been explored to its limit is shown by the fact that only 16 associations reported such a bureau in operation, while 3 reported one in process.

The widespread interest in health councils has not had any particular effect on the formation of state health councils. Twenty state associations report participation in health councils, most of which have been in operation for several years. An additional 4 associations reported health councils in process.

Over one half of the state health councils are limited to representatives of the various professions: medicine, dentistry, pharmacy, etc. In this they differ from the popular conception of a health council, which is composed of representatives of all groups, professional and lay.

Component Societies

For the purpose of tabulation the replies from the county societies have been divided into two groups. Group I refers to replies received from county medical societies having a regular headquarters office and employing lay personnel. Group II refers to replies received from societies which do not employ lay personnel. Tabulation of the information received has been made as brief as possible. The names of specific county societies have been omitted in the tabulation of various activities, but will be made available to physicians or society executives on request.

Organization.—Eleven societies reported owning their own building; in addition, one society is raising funds for a building, and another is considering a building program. Other societies in group I are housed as follows: 36 rent offices and 18 use other facilities, such as hospitals and medical libraries.

Sixty-seven of the 159 societies replying employ lay personnel, and they are in 29 of the 48 states. In 52 of these societies the

lay personnel is listed as full time and in 15 as part time. Some are full time executive secretaries; others are librarians, and a few are listed as part time secretaries. Thirty-six employees listed as executive secretaries are men, and approximately 20 are women.

A few counties in group II have offices, most of them requiring space only for their scientific meetings. However, 6 state that they rent offices; one owns its own building; one has plans under way for building its own headquarters, and another indicated that funds were being accumulated for a building program.

Considering the functions and responsibilities of the county societies, it is surprising how much is accomplished with so little in funds. While the annual dues range from nothing to \$50, almost 60 per cent of the 159 societies reporting collect \$15 a year or less per member. The average physician pays more than this for a day of recreation.

Scientific Activities.—The scientific meeting is one of the county medical society's important functions. Most county medical societies were organized for the purpose of providing their members with an opportunity to keep pace with the scientific medical advancements, and 115 of the 159 societies reporting have a monthly meeting schedule.

While county medical societies continue to sponsor regular scientific meetings, the declining attendance at such meetings is an unsolved problem. The increasing number of hospital meetings, easy transportation to medical centers and the pressure on the physicians by outside sources all contributed to the reduction of attendance at the county society programs. The Council asked the questions "What topics draw best" and "What topics draw least." In answer to the first question a majority of the societies in both groups I and II stated that "general medical programs of interest to general practitioners" draw the best attendance. In answer to the second question, an equally large majority in both groups answered that papers on "specialty subjects" or "nonmedical subjects" draw the least. Other programs listed as well attended are those presenting "recent advances in medicine" and conducted by "well known guest speakers." "Research papers" and "local speakers" were not popular to the general membership.

In addition to the regular scientific meetings, many county societies have organized or make available special postgraduate programs for their members. In group I, 36 societies reported that postgraduate programs were available to the members. In group II, 38 societies reported that postgraduate programs were available to the membership.

The availability of medical library facilities is most important to the present day physician. As a result, most of the medical societies serving the larger cities have either developed their own medical libraries or have made provision for the use of medical library facilities on the part of their membership. Of the 67 county societies reporting in group I, 24 have their own libraries and 32 state that facilities are available to their members. The replies show that physicians in the smaller communities also have library facilities available to them. Of the 92 societies in group II reporting, 15 have their own libraries and 42 have other medical library facilities available to their members.

Other Activities.—Following is a tabulation of other activities carried on by the medical societies in both group I and group II.

Activity	Number of Societies Group I	Group II
Health councils.....	46	36
Indigent care programs.....	37	28
Cancer detection programs.....	47	59
Tuberculosis case finding programs.....	39	47
Bulletins.....	55	49
Radio programs.....	38	11
Speaker's bureau.....	38	28
Collection bureaus.....	23	8
Telephone answering services.....	28	29
Blood bank.....	23	12
Insurance-Malpractice.....	31	40
Accident and health.....	41	50
Life.....	4	6
Annuities.....	—	2
Social Activities.....		
Parties.....	51	63
Golf tournaments.....	31	27
Bowling league.....	5	7
Other.....	18	16

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Ruptured Blood Vessel in Eye Due to Strain.—This was an action for the recovery of a workmen's compensation award for an eye injury which occurred during the course of the petitioner's employment. From the granting of an award, the employer appealed to the Supreme Court of Oklahoma.

The petitioner was employed as a tool dresser in a well-drilling operation. While lifting a heavy beam of about 100 pounds a dark spot suddenly developed in his left eye, which nearly blinded him. It subsequently developed that the strain of lifting had so increased his blood pressure as to cause the rupture of a blood vessel in his eye, with the result that he became industrially blind. The petitioner's eye specialist admitted that an existing tubercular condition had weakened the walls of the blood vessels in the eye, but he stated definitely that the injury was due to the lifting of the beam.

The employer contended that the strain of lifting the beam was not an unusual or extraordinary strain, but was an ordinary occurrence in connection with the petitioner's work and that therefore the petitioner did not sustain an accidental injury as that term has been defined by other decisions of the Supreme Court of Oklahoma. The court, however, pointed out that the term "accident" as employed in the compensation acts is broad enough to include an injury from muscular strain or physical overexertion, such as hernia, or rupture, or bursting blood vessels, even though the physical condition of the employee is such as to predispose him to the injury. In the instant case, the Supreme Court continued, the evidence sufficiently showed a strain which, according to the testimony of the petitioner's physician, led directly to the hemorrhage in his eye. The strain of lifting the beam, while lifting was frequently undertaken by the petitioner, was not what could be termed an ordinary occurrence. We have frequently held, the Supreme Court concluded, that an injury occasioned by a strain which causes a dormant or latent condition to light up is an accidental injury within the workmen's compensation act. Accordingly the award in favor of the petitioner was sustained.—*Special Indemnity Fund v. McFee*, 193 P. (2d) 301 (Okla., 1948).

Medical Motion Pictures

FILM REVIEW

Trichomonal and Monilial Vaginitis. Pathology—Diagnosis—Treatment. 16 mm., color, sound, 1,500 feet, (1 reel), showing time forty-one minutes. Prepared in 1947 by J. P. Greenhill, M.D., Cook County Hospital, Chicago. Produced by the Medical Film Guild, New York through a grant from the G. D. Searle & Co., Chicago. Procurable on loan from The Medical Film Guild, 167 West Fifty-Seventh Street, New York 19.

The film presents with considerable detail an outline of the diagnosis and treatment of trichomonal vaginitis. Included are a discussion of laboratory diagnostic procedures and several scenes depicting an ancient aspect of part of the history of vaginal infection. The latter could be omitted, as the scenes tend to detract from the main subject of the film.

The photography is good except for the photomicrographs. The narration is not undertaken by a professional. Some criticism can be directed at the length of the film, as lengthiness encourages unnecessary details. The diagnosis and treatment of trichomonal vaginitis may not always be as simple as depicted in the film, nor is the percentage of cases probably as high as indicated. Furthermore, the danger of contamination from the rectum by the method of wiping the anus, as well as the comparatively uncommon symptoms, general weakness and malaise, has been overemphasized. Air embolism might occur after the use of the demonstrated squirting device. While other criticisms are indicated the film does offer information that the general practitioner may welcome. It will not be especially suitable for the classroom in medical schools because of its length and limited discussion.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various Centers, Feb., June, and Sept., 1949. *Part II.* April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa. *Part III.* Boston & New York, Autumn. Sec., Dr. J. S. Rodman, 25 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. Oral, Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 18. Oral, Chicago, Oct. 13-15; Philadelphia, Nov. 3-5; San Francisco, date not set. Candidates not taking these special oral examinations will have no opportunity for admission next year. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Chicago, Oct. 6. *Written.* St. Louis, Oct. 15-19. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I.* Various Centers, April & May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York City, Dec. 13-15. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Little Rock.* Nov. 4-5. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral.* Los Angeles, Nov. 20-21. *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * *Endorsement.* Denver, Oct. 5. Final date for filing application is Sept. 18. Sec.-Treas., Dr. Walter W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * *Examination.* Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination.* Derby, Nov. 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

FLORIDA: * *Examination.* Jacksonville, Nov. 28-30. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GEORGIA: *Examination.* Atlanta, Oct. 12-13. *Endorsement.* Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: *Endorsement.* Agaña, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

IDAHO: Boise, Jan. 19-12. Dir., Bureau of Occupational Licenses, Miss Estella S. Mulliner, State House, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Des Moines, Dec. 6-8. *Endorsement.* Des Moines, Oct. 4. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination.* Louisville, Dec. 13-15. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

LOUISIANA: *Examination.* New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Hibernia Bank Bldg., New Orleans 12. *Homeopathic Examination.* Baton Rouge, subject to call. Sec., Dr. F. H. Hardenstein, 715 Pere Marquette Bldg., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination.* Baltimore, Dec. 7-8. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. G. L. Schadt, 413 E. State House, Boston.

MICHIGAN: * *Examination.* Lansing, Oct. 13-15. *Endorsement.* Oct. 12. Sec., Dr. J. E. McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity.* Jackson, Dec. 6. Exec. Officer, State Board of Health, Dr. Felix J. Underwood, Jackson.

MISSOURI: St. Louis, Oct. 25-27. Exec. Sec., Mr. John A. Hailey, P.O. Box 4, Jefferson City, Mo.

MONTANA: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW JERSEY: *Examination.* Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

NEW YORK: *Examination.* Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 23 South Pearl St., Albany 7.

OHIO: *Examination.* Columbus, Dec. *Endorsement.* Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Oct. 24-25. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: * *Examination.* Portland, Jan. 1949. *Endorsement.* Oct. 15-16. Final date for filing application is Oct. 1. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

RHODE ISLAND: * *Examination.* Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Endorsement.* Oct. 4. Sec., Dr. N. B. Heyward, 1329 Blandford St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TENNESSEE: * Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabbs, Medical Arts Bldg., Fort Worth.

UTAH: *Examination.* Salt Lake City, July. *Endorsement.* Oct. 4. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination.* Burlington, Feb. Sec., Dr. F. J. Lawlis, Richford.

VIRGIN ISLANDS: *Examination.* Charlotte Amalie, Dec. 8-9. Comm., Dr. Christian R. Moorhead, Charlotte Amalie.

VIRGINIA: *Examination.* Richmond, Dec. 3-4. *Endorsement.* Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WEST VIRGINIA: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

WYOMING: *Examination.* Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, Sept. 21. Sec., Mr. Francis A. Roy, Univ. of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 5. Sec., Mr. L. E. Gebauer, 1002 Donaghy Bldg., Little Rock.

CONNECTICUT: *Examination.* Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

FLORIDA: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

MINNESOTA: *Examination.* Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: *Examination.* Santa Fe, Sept. 19. Sec., Miss Margaret Kilkenny, 110 W. Houghton St., Santa Fe.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Dec. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: *Examination.* Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WASHINGTON: Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: *Examination.* Madison, Sept. 25. Final date for filing application is Sept. 18. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore 18:349-450 (May) 1948

- Green Pastures in Pathology. S. P. Reimann.—p. 349.
Isotopes in Medicine. Grace Medes.—p. 354.
Kahn Reactions with Cardiolipin Antigen Compared with Kahn Antigen.
II: Note on Microflocculation Procedure with Cardiolipin Antigen.
R. L. Kahn and Elizabeth B. McDermott.—p. 364.
Isoimmunization with the A and B Factors and Its Relation to
Hemolytic Disease of Newborn. S. H. Polayes and J. McNally Jr.
—p. 375.
Growth of Pathogenic Fungi on New Culture Medium. M. L. Littman.
—p. 409.
Plasma Concentrations Following Intramuscular Injections of Various
Doses of Penicillin. A. Kathrine Miller and W. P. Boyer.—p. 421.
Effect of Variations in Concentration of Non-Protein Constituents of
Serum on Correlation Between Specific Gravity and Protein Content.
R. A. Mortensen.—p. 429.
Simple Method of Determining Nonprotein Nitrogen, Total Protein and
Albumin in Blood Serum Samples by Using Conway Cells. S. Levy.
—p. 435.
Application of Weichselbaum Biuret Reagent to Determination of Spinal
Fluid Protein. M. Ditterbrandt.—p. 439.

American Journal of Medicine, New York 4:1-626 (April) 1948. Partial Index

- Pneumonia and Erythema Multiforme Exudativum: Report of 4 cases
and 3 Autopsies. M. Finland, L. S. Jolliffe and F. Parker Jr.
—p. 473.
Differential Diagnostic Problems in Acute Pulmonary Embolization.
I. R. Roth.—p. 493.
*Origin of Thirst in Diabetes Insipidus. J. H. Holmes and M. I.
Gregersen.—p. 503.
Radiation Injuries of Intestines. C. W. Hock, J. Rodrigues, Anna
Hamann and W. L. Palmer.—p. 511.
Lichen Planus, Atypical: Report of 10 Cases. A. A. Hollbrook.—p. 525.
Neurogenic Pain Simulating Visceral Disease. L. Motley.—p. 539.
Treatment of Hypertensive Vascular Disease with Rice Diet. W. Kemp-
ner.—p. 545.
*Low Salt Diets and Arterial Hypertension. H. A. Schroeder.—p. 578.

Thirst in Diabetes Insipidus.—Holmes and Gregersen studied 5 cases of diabetes insipidus in order to evaluate the mechanism of polydipsia under the following conditions: (1) water ad libitum, (2) pitressin therapy, (3) the forcing of fluids and (4) ingestion of salt. During intense thirst there was a reduction of salivary flow. When thirst was abolished by pitressin therapy or by the forcing of fluids, the salivary flow increased to normal values. These observations are consistent with the "dry mouth" theory of thirst. Pitressin therapy or the forcing of fluids resulted in an increase in plasma volume and extracellular volume over the values observed for untreated diabetes insipidus. The thirst mechanism in diabetes insipidus is similar to that observed in simple dehydration and is caused in this instance by the severe polyuria. This is confirmed by the observations that pitressin therapy or the forcing of fluids alleviates thirst and produces increases in plasma and extracellular volume and in salivary flow similar to that observed after ingestion of water in dehydration. Salt, while it may be effective in maintaining plasma volume and available fluid at the same levels as observed under pitressin therapy and when fluids are forced, does not abolish the thirst of diabetes insipidus; on the contrary, it increases the polydipsia. The reaction to salt is the same as that seen in the normal person.

Low Salt Diets in Hypertension.—Schroeder discusses some of the difficulties in the use of low salt diets in the management of hypertension. The possible role of the adrenal cortex in arterial hypertension and its relation to disturbances in tension and its relation to disturbances in salt balance are considered in the light of experimental and clinical evidence. While many subjects respond favorably to rigid restriction of salt by

lowering of blood pressure, psychotherapeutic influences may play a large part in this change in some. If subjects are adequately controlled, the change to be expected is not great and may be absent in patients with severe hypertension in whom therapy is most needed. It is possible that patients who do respond favorably to this diet exhibit a different type of hypertension in which the adrenal cortex is overactive. The mechanism of the response is not understood. No special advantage has been demonstrated in the use of a diet exclusively composed of rice, fruit juices and vitamins, as compared with a normal diet with a similar content of salt, and this diet has several disadvantages.

American J. Obstetrics and Gynecology, St. Louis 55:367-550 (March) 1948. Partial Index

- Plasma Proteins in Pregnancy. J. L. Macarthur.—p. 382.
Study of Maternal Mortality in Canada. Marion Kerr.—p. 396.
Vaginal Repair Combined with Vaginal Hysterectomy. J. E. Harrison.—p. 403.
Sterility in the Female. K. M. Grant.—p. 416.
Improved Operative Technic for Salpingostomy. H. W. Johnston.—p. 426.
Study of Breech Delivery. A. E. Trites.—p. 430.
*In Vitro Fertilization and Cleavage of Human Ovarian Eggs. Miriam F. Menkin and J. Rock.—p. 440.
Evaluation of Vaginal Smear Method for Diagnosis of Uterine Cancer. L. C. Scheffey, A. E. Rakoff and J. Hoffman.—p. 453.
*Observations on Vaginal Absorption of Penicillin. S. Abel, C. J. Farmer and Jeanne Doucette.—p. 461.
Permeability of Human Placenta to Sodium in Normal and Abnormal Pregnancies and Supply of Sodium to Human Fetus as Determined with Radioactive Sodium. L. B. Flexner, D. B. Cowie, L. M. Hellman and others.—p. 469.
Fate of Living Viable Babies in Extrauterine Pregnancies. M. Suter and C. Wiehser.—p. 489.
Antepartum Hemorrhage. R. A. Kimbrough and B. D. Jones.—p. 496.
Elective Use of Kielland Forceps in Management of Occipitoposterior and Occipitotransverse Positions. L. M. Miles.—p. 504.
Multiple Sulfonamide Therapeutic Measure in Postoperative Care of Cervix and Vagina. A. H. Marbach.—p. 511.
Anemias of Pregnancy. P. J. Talso and W. J. Dieckmann.—p. 518.
Antenatal Blood Group Determination. Preliminary Report. S. H. Polayes, S. Lubin and J. McNally Jr.—p. 524.
Late Recurrence of Cervical Carcinoma Following Radiation Therapy. H. Speert.—p. 533.

In Vitro Fertilization of Human Eggs.—Menkin and Rock performed in vitro insemination experiments with human eggs. Fertilization was obtained and cleavage induced in three experiments. The eggs were recovered from ovarian tissue removed from 3 women between the ages of 31 and 38 years on whom complete hysterectomy and right salpingo-oophorectomy were performed on the tenth, the eleventh and the twelfth day of the cycle. The eggs were obtained from follicles of the extirpated ovary, one to four and one-half hours following oophorectomy. After rapid transfer through three portions of sterile Locke's solution, the eggs were pipetted into a Carrel flask containing 3 cc. of serum prepared from the blood of the egg donor. The eggs were then placed in the incubator at 37.5 C. After an incubation period of twenty-two and one-half to twenty-seven hours the eggs were rapidly transferred through small amounts of Locke's solution in three watch glasses. In the third watch glass were then pipetted a few drops of a suspension of spermatozoa which had been at room temperature for two hours and forty-five minutes to four and one-half hours after ejaculation. The watch glass containing the ovum and spermatozoa was observed for one hour under the microscope. The spermatozoa were clearly seen to travel through the interstices of the loose cellular formation surrounding the egg, and many were noted in active motion around the pellucid zone. That was followed by culture of the preparation in human blood serum for forty and one-half hours to forty-six hours. When examined at the end of the incubation period two of the eggs were found to be in the two-cell stage, and two in the three-cell stage. The time relations in these experiments are in general accord with those reported previously for the in vivo fertilized tubal monkey egg cultured in vitro, as well as for in vivo fertilized mouse eggs studied at different intervals after copulation.

Vaginal Absorption of Penicillin.—Abel and his co-workers studied the absorption of penicillin calcium from the vagina in 39 women who were divided in four groups in whom blood level studies were conducted. In 10 patients between the ages of 23 and 59 years, who had vaginitis, 100,000 units of penicillin

General Hospital during the war, *Actinomyces* organisms were isolated from the sputum in 109 of 240 patients. They were also isolated from exudate obtained bronchoscopically in 65 of these 109 patients. The exudate aspirated from pulmonary abscesses in 6 patients, and from the sinus tracts of 2 patients, also contained *Actinomyces* in combination with other organisms. Thirty-seven of the 65 patients with *Actinomyces* organisms in bronchial exudate had bronchiectasis with varying degrees of pneumonitis. The *Actinomyces* organisms in patients with bronchiectasis were felt to be saprophytic and not clinically important under aerobic conditions. In another 8 patients the only apparent disease was a moderately severe chronic bronchitis. There was roentgen and clinical evidence of either aspiration pneumonia, pulmonary abscess or extensive pulmonary suppuration in 20 patients. *Actinomyces* was isolated and cultured from these patients from exudate obtained bronchoscopically or aspirated from pulmonary abscesses, and in 6 instances taken directly from the lung after pulmonary resection. The finding of *Actinomyces* with such frequency caused considerable concern. Care was exercised to verify the identity of this supposedly pathogenic non-acid-fast anaerobic ray fungus. Sputum is an unreliable source for examinations for fungous infections because of the contamination by the bacterial flora of the mouth. The author discusses the response to conservative and surgical therapy and says that the prognosis depends largely on the severity of the infection. Favorable response occurred with the use of chemotherapeutic drugs and antibiotics, particularly when these were used in conjunction with surgical therapy. In 9 patients healing resulted only after resection of the diseased pulmonary tissue by lobectomy or pneumonectomy.

Annals of Allergy, Minneapolis

6:99-218 (March-April) 1948

- Electroencephalograms of Allergic Children. Susan C. Dees and H. Lowenbach.—p. 99.
- Experimental Studies on Acute Disseminated Encephalomyelitis in Rhesus Monkey.—p. 109.
- Psychosomatic Aspects of Hay Fever and Asthma Prior to 1900. H. A. Abramson.—p. 110.
- Effects of Decapryl Succinate, a New Antihistamine Agent, in Some Natural and Acquired Hypersensitivities in Animals. Barbara B. Brown and H. W. Werner.—p. 122.
- Studies on Eggwhite Sensitivity in Rat: Influence of Endocrine Glands. J. Leger and G. M. C. Masson.—p. 131.
- Vulvo-Vaginal Pruritus Associated with Hay Fever. W. F. Mitchell, Iola Sison and J. H. Mitchell.—p. 144.
- Temporal Arteritis: Case Report. M. Zeller.—p. 148.
- Convulsions Following Epinephrine: Report of Case. A. Seltzer.—p. 151.
- Weltmann Reaction in Allergic Rhinitis. Susan C. Dees and D. J. Vracin.—p. 154.

Annals of Otol., Rhin. and Laryngology, St. Louis

57:5-282 (March) 1948. Partial Index

- Orbital Complications Resulting from Lesions of Sinuses. A. T. Smith and J. T. Spencer.—p. 5.
- Observations on Bone Conduction in Fenestration Cases: Physiologic Considerations. A. L. Juers.—p. 28.
- Reevaluation of Implantation of Fascial Strips Through Masseter Muscle for Surgical Correction of Facial Paralysis: Report of Three Additional Cases. N. Owens.—p. 55.
- Special Technic for Diagnosis and Treatment of Psychogenic Deafness. W. G. Hardy.—p. 65.
- Influenza Laryngitis. D. W. Brewer and J. H. Tom Rambo.—p. 96.
- *Treatment of Chronic Nasal Diphtheria Carriers: Report of Case. J. X. Medwick and O. E. Hallberg.—p. 134.
- Laryngeal Edema in Epidemic Parotitis. J. S. Walker and E. L. Gann.—p. 163.
- Penicillin Treatment of Nerve Deafness Due to Syphilis. W. E. Loch and H. A. Tucker.—p. 167.
- Relation of Dosage to Streptomycin Toxicity. R. Tompsett.—p. 181.

Treatment of Nasal Diphtheria Carriers.—Medwick and Hallberg report the case of a man, aged 71, who was seen at the Mayo Clinic in June 1947. He complained that he had a bad throat and that he had been found to be a diphtheria carrier in March 1945, after routine culture of material from the nose and throat at a state hospital in which he was employed. Symptoms included a purulent nasal discharge and variable degrees of irritation of the throat for a few years prior to his coming to the clinic. The patient never had been immunized against diphtheria. At the age of 7 years he had had diphtheria. Nasal polyps had been removed, first in 1924 and seven times subsequently. Measures adopted by the patient to alter his status as a carrier of diphtheria included the persistent local application

of various antiseptic agents and sprays for two years, without success. Because of the chronic sinusitis, intranasal surgical treatment combined with the use of penicillin and diphtheria antitoxin was instituted. Convalescence was uneventful. Four successive cultures of material from the nose and throat were submitted during a period of six weeks and all were negative for *Corynebacterium diphtheriae*. The authors conclude that despite the infrequency of the occurrence of diphtheria organisms among nonimmunized patients who have chronic nasal infections, material from the nose should be cultured for diphtheria organisms. Carriers who have been cured should be checked periodically.

Annals of Surgery, Philadelphia

127:577-768 (April) 1948. Partial Index

- Marrow-Nailing of Recent Fractures, Pseudarthrosis and Bone Plastic: Experiences in 100 Cases. A. Westerborn.—p. 577.
- Cardiac Resuscitation. R. D. Dripps, C. K. Kirby, Julian Johnson and W. H. Erb.—p. 592.
- *Metabolic Study of Burn Cases. J. W. Keyser.—p. 605.
- Surgical Triangles of Inguinopectineal Region (Inguina): Their Classification, Parietal Relationship and Significance in Hernia Repair. F. E. Dugdale and C. C. Burton.—p. 627.
- *Thyroiditis. G. Crile Jr.—p. 640.
- Coarctation and Aneurysm of Aorta: Report of Case Treated by Excision and End-to-End Suture of Aorta. H. B. Shumacker Jr.—p. 655.
- Uterine Anomaly: Duplication of Uterus, Three Tubes and Three Ovaries: Report of Case. W. N. Rowley.—p. 676.
- Selection of Patients for Thoracolumbar Sympathectomy: Description of Set of Rules for Elimination of Failures and Fatalities. J. W. Hinton and J. W. Lord Jr.—p. 681.
- "Functional" Subclavian Arterial Murmur: Possible Relation to Scalenus Anticus Syndrome, Costoclavicular Compression, or Neurovascular Syndrome of Wright. R. B. Pomerantz.—p. 688.
- Peripheral Nerve Surgery: Repair of Nerve Defects. E. G. Grantham and C. Pollard Jr.—p. 696.
- Myxoma, Tumor of Primitive Mesenchyme. A. P. Stout.—p. 706.
- Raynaud's Phenomenon and Atypical Causalgia: Role of Sympathectomy. L. J. Kleinsasser.—p. 720.
- Multiple Intussusceptions, Direct and Retrograde, of Traumatic Origin. W. H. Falor.—p. 730.
- Carcinosarcoma of Uterus. J. R. Lisa, H. Hartmann, I. Bajer.—p. 738.
- Congenital Absence of Gallbladder with Case Report. L. Villareal.—p. 745.
- Lipoma of Duodenum Causing Melena. T. D. Allison and J. R. Babcock.—p. 754.
- New Method of Restoring Continuity of Alimentary Canal in Cases of Congenital Atresia of Esophagus with Trachea-Esophageal Fistula Not Treated by Immediate Primary Anastomosis. R. H. Sweet.—p. 757.

Metabolic Study in Cases of Burns.—Keyser studied the daily urinary nitrogen excretion in 20 cases of burns. Only a few showed an average daily nitrogen excretion considerably greater than normal and in many patients it was somewhat low. Nitrogen balances were determined sixteen times in 7 cases. In 5 of these the nitrogen in the exudate from the burned area was measured. The tendency for the nitrogen balance in burned patients to become negative was confirmed, but negative balances seemed to be due to low intake rather than to increased loss of nitrogen. Exudate nitrogen, measured in 10 cases, made up from 2 to 25 per cent of the total nitrogen output (excluding feces). A fall in plasma protein was observed soon after burning in 3 cases in which serial determinations were made over several days. Low plasma protein values were encountered in other cases also. Creatinuria was observed in 3 men with burns of 7 per cent, 15 per cent and 20 per cent of the body surface. Proteinuria was observed in many cases, especially in those with the more extensive burns. Plasma chloride was determined at intervals in a number of cases and correlated with urine chloride. The fall in plasma chloride noted by some earlier investigators was confirmed and is discussed in relation to intravenous plasma therapy. Blood sugar levels (venous blood, Folin-Wu method) after burns of various degrees of severity were measured in 11 cases. In 2 cases hyperglycemia was certain, and in a few others values were perhaps slightly high.

Thyroiditis.—Crile reports on three types of thyroiditis: 27 instances of subacute thyroiditis; 14 of struma lymphomatosa, and 11 of Riedel's struma. The facts that subacute thyroiditis is almost always associated with pain and tenderness and that these symptoms only rarely occur in the other types are evidence against the possibility that subacute thyroiditis represents an early stage of the more chronic processes. The facts that Riedel's struma is more often unilateral, that struma

lymphomatosa usually involves the entire thyroid and that adenomas are frequently present in Riedel's struma but rarely if ever recognized in struma lymphomatosa are further evidence against progress of one lesion to the other. It is possible that subacute thyroiditis is the result of a virus infection. Struma lymphomatosa appears to be a systemic disease, possibly of the deficiency type. Further study of its relationship to achlorhydria, anemia, generalized lymphoid hyperplasia and possibly to vitamin or other deficiencies is indicated. Riedel's thyroiditis appears to be a proliferative form of fibrosis usually centering about a degenerating adenoma. Roentgen irradiation is the treatment of choice for subacute thyroiditis. Thiouracil may be of value. In the rare cases of struma lymphomatosa in which the diagnosis is made before operation roentgen irradiation should be given a trial. If struma lymphomatosa is recognized at the time of operation a conservative resection of both lobes of the thyroid is recommended. The morbidity of radical resection is high. In Riedel's struma roentgen rays are of little value. If the onion-like concentric laminations in the fibrous tissue surrounding the central degenerating adenoma can be found, these avascular planes can be followed by blunt dissection and the core of the lobe shelled out without disturbing its capsule. Symptoms are relieved after this procedure.

Archives of Pathology, Chicago

45:135-270 (Feb.) 1948

- Morphologic Study of Cardiac Conduction System: V. Pathogenesis of Heart Block and Bundle Branch Block. D. J. Glomset and R. F. Birge.—p. 135.
- Manifest Manifestations of Reticulo-Endothelial Disease: Report of Case of Hodgkin's Disease (Lymphogranulomatosis). Acute Hemolytic Anemia and Giant Follicular Lymphadenopathy. C. G. Tedeschi and T. J. Carnicelli.—p. 171.
- Spread of Carcinoma to Spleen: Its Relation to Generalized Carcinomatous Spread. J. W. Harman and P. Dacorso.—p. 179.
- Laennec Cirrhosis: Its Histogenesis, with Special Reference to Role of Angiogenesis. E. Moschowitz.—p. 187.
- Statistical and Histologic Study of One Hundred and Twenty Canine Neoplasms. R. M. Mulligan.—p. 216.
- Mastitis of Mouse as Related to Postsecretory Mammary Involution. W. L. Williams and R. A. Patnode.—p. 229.
- Role Played by Salivary Glands in "Alarm Reaction." W. E. Ehrlich and J. Seifter.—p. 239.
- Normal Variation of Costochondral Junction. J. Cohen.—p. 246.

Laennec Cirrhosis.—In order to study the histogenesis from the biologic as opposed to the static point of view, Moschowitz examined lesions from the earliest to the most mature phase in serial sections. His studies were made on 75 livers in all stages of cirrhosis. There was evidence that the earliest stage of Laennec cirrhosis is invariably a fatty liver. Transformation of fatty liver to cirrhosis may be caused by interaction of nutritional deficiency and a deficiency of lipotropic factors. If a proper diet is instituted, the fat eventually becomes more or less depleted, but this does not necessarily prevent the cirrhotic process from continuing, at least for a certain period. Under favorable conditions, the cirrhotic process may cease, and the end result is "latent cirrhosis." The first evidence of beginning cirrhosis is an inflammatory reaction, with round cells, monocytes, plasma cells and a few polymorphonuclear leukocytes infiltrating the periportal spaces. This is the exudative phase. The succeeding phase is a productive one and is represented by a fibroblastic transformation. The third phase is the formation of a capillary network in these areas. The further development of these capillaries proceeds according to the laws of Thoma. Many of the capillaries collapse, and the resulting cells evolve into progressive fibrosis and ultimately sclerosis. Other capillaries maintain their integrity and, according to the laws of Thoma, lengthen and enlarge and serve as the main blood supply of the granulomatous and fibrous strands. Serial section shows that these vessels communicate with the portal veins. No evidence is found of an arterial supply of these strands. This further evolution is similar to that in the embryo and in granulation tissue. These granulomatous areas at first penetrate into the interlobular septal spaces or into the lobule and unite with similar adjacent projections from other portal spaces. Often they unite with projections from the hepatic veins, partially converting the blood supply of the liver as in an Eck fistula. These have been termed bivenous strands. This distribution forms the typical pattern in Laennec cirrhosis. The progressive sclerosis and its elastic transformation convert the liver from a

hypertrophic to an atrophic one. In this interpretation the connective tissue structure is the result of the multipotential properties of the cells of the adult mesenchyma, which maintain in a large measure their embryonic potentialities.

Archives of Surgery, Chicago

56:125-258 (Feb.) 1948

- *Principal Indications for Splenectomy During Childhood. G. Van Buren and G. M. Curtis.—p. 125.
- Plastic Surgical Repair of Facial Paralysis. P. W. Greeley.—p. 132.
- Tonus of Bladder During Spinal "Shock." R. M. Nesbit and J. Lapidus.—p. 138.
- Total Gastrectomy with Esophagoduodenal Anastomosis. J. T. Priestley and F. Kumpuris.—p. 145.
- *Ligation of Splenic Artery in Patients with Portal Hypertension. T. C. Everson and W. H. Cole.—p. 153.
- Aeroembolism of Bone Marrow: Experimental Study. P. C. Colonna and E. D. Jones.—p. 161.
- Treatment of Carcinoma of the Fundus Uteri. L. S. McGoogan and H. B. Hunt.—p. 172.
- Unusual Proliferative Reactions to Suture Material. J. A. Witter.—p. 178.
- *Phlebotrombosis Associated with Mucin-Producing Carcinomas of Tail and Body of Pancreas: Clinicopathologic Study of 2 Cases with Necropsy. W. K. Jennings and W. O. Russell.—p. 186.
- Surgical Treatment of Carcinoma of Ampulla of Vater and Extrahepatic Bile Ducts. V. E. Siler and M. M. Zininger.—p. 199.
- Bilateral Cervical Ribs Associated with Neuropathic Joints. A. F. Jonas Jr., and W. S. Rise.—p. 224.
- Femoral Hernia: Treatment and Results. R. F. Mueller.—p. 229.
- Congenital Diaphragmatic Hernia: Anatomic and Surgical Importance of Left Triangular Ligament of Liver. P. Thorek.—p. 238.
- Absorption of Blood from Peritoneal Cavity. C. R. Snead.—p. 249.

Splenectomy During Childhood.—Splenectomy was performed on 55 children at the Surgical Department of Ohio State University College between 1933 and 1946. Van Buren and Curtis cite following indications for the operation: congenital hemolytic icterus, thrombopenic purpura and the Banti syndrome. Splenectomy was also performed for splenic panhematocytopenia, traumatic rupture, sickle cell anemia, hypoplastic anemia, Gaucher's disease and pseudohemophilia. The age of the infant with congenital hemolytic icterus should be no contraindication to splenectomy. The youngest patient in this group was 30 days old. There was 1 fatality in 20 children subjected to splenectomy on account of congenital hemolytic icterus. As to the indications in thrombopenic purpura, the authors feel that splenectomy is not contraindicated even in the presence of an acute crisis, provided adequate preoperative blood transfusions are given. Delay in removing the spleen may result in a fatality. Two of the 22 patients with thrombopenic purpura were treated with preliminary supportive measures, but despite medical management the condition of the children became progressively worse. Emergency splenectomy in both instances proved efficacious. The remaining 20 were operated on during the interval of quiescence. There was 1 fatality after splenectomy. In the 7 patients in whom the condition was diagnosed as Banti's syndrome, the changes observed in the spleen after splenectomy were compatible with those commonly found. One of the 7 patients with Banti's syndrome died after splenectomy. Accessory spleens were found in 2 of the 22 children with thrombopenic purpura and in 13 of the 20 children with congenital hemolytic icterus. Failure to remove the accessory spleen at the time of splenectomy may result in a recurrence.

Ligation of Splenic Artery in Portal Hypertension.—According to Everson and Cole the portacaval shunt type of operation appears to offer the greatest promise for the relief of the distressing effects of portal hypertension. It is, however, an operation of considerable magnitude, and places a tremendous additional load on an already overtaxed patient. The procedure which they emphasize for poor risk patients is ligation of the splenic artery. This operation is a relatively minor intervention when compared with splenectomy or portacaval shunt. The procedure is not new, but it has not been widely used. After ligation of the splenic artery 1 of the 3 patients operated on showed immediate improvement, which has persisted up to date (one year after operation). The second patient is alive almost three years since the operation. Ascites has not improved appreciably, but the patient reports subjective improvement. This, together with the length of the survival period, suggests that the ligation of the splenic artery was of some benefit. The third patient died four months after the

ligation. Experience with omentopexy performed in their cases and the work of Cates indicate that the favorable results are not due to this procedure. Ligation of the splenic artery will not replace portacaval shunt in the treatment of portal hypertension. It is indicated in patients who could not tolerate the more extensive procedure. Even though there is an appreciable decrease in the size of the spleen after ligation, there was no evidence of necrosis.

Phlebothrombosis Associated with Carcinomas of Pancreas.—Jennings and Russell add 2 cases to the list of malignant pancreatic tumors associated with a thrombotic tendency. The pathologic study of the two patients demonstrated remarkably similar pathologic changes. In each there was a carcinoma of the tail or the body of the pancreas in which the tumor cells were producing intracellular and extracellular substance. One of the tumors was producing an abundant amount of basophilic-staining mucus, while in the other only a small amount of intracellular and extracellular substance was demonstrated. There was associated phlebothrombosis involving both the portal and the systemic venous systems in each case. The most reasonable explanation for the phlebothrombosis was some alteration of the blood-clotting mechanism. These 2 cases are examples of a characteristic syndrome, in which a high incidence of phlebothrombosis is associated with carcinomas arising in the tail or the body of the pancreas. Specific knowledge concerning the relationship of disturbance in the mechanism of blood coagulation to the syndrome under consideration might prove helpful in the establishment of an early diagnosis. To date, no clearcut clinical differentiation has been made between multiple thrombophlebitis ("migrating phlebitis") and multiple phlebothrombosis. Once these two conditions can be established as separate clinical entities, it is possible that a definite clue may be had to the existence of mucinous carcinoma situated in the pancreas, stomach or lung, the odds greatly favoring the first-mentioned organ. Such evidence may well constitute an indication for abdominal exploration and possible cure of the disease.

Endocrinology, Springfield, Ill.

42:153-236 (March) 1948. Partial Index

- Effect of Dietary Protein Content On Nitrogen Retention and Weight Gain Produced by Hypophyseal Growth Hormone. G. S. Gordan, L. L. Bennett, C. H. Li and H. M. Evans.—p. 153.
- Attempt to Explain Anomalous Action of Lugol's Solution in Exophthalmic Goiter. J. F. McClelland, W. C. Foster and J. W. Cavett.—p. 168.
- Metabolism of Steroid Hormones: Isolation of Etiocholanediol-3(Alpha), 17(Alpha) from Human Urine. A. M. Miller and R. I. Dorfman.—p. 174.
- Pathology of Adrenal Gland in Addison's Disease with Special Reference to Adrenocortical Contraction. N. B. Friedman.—p. 181.
- Progesterone and Desoxyprogesterone in Steroid Control of Gonadotrophic Function of Hypophysis: Exemplified by Behavior of Intrasplenic Ovarian Graft in Guinea Pig. A. Lipschutz, R. Iglesias, S. Bruzzone, J. Humerez and J. M. Penaranda.—p. 201.
- Effect of Dietary Protein Concentration On Secretion of Adrenocorticotrophin. F. Moya, J. L. Prado, R. Rodriguez, and others.—p. 223.

Illinois Medical Journal, Chicago

93:3-64 (April) 1948

- *Surgical Treatment of Psychoses. E. Liebert and L. Davis.—p. 203.
- *Influence of Insulin on Degenerative Changes in Diabetes Mellitus. R. N. Hedges.—p. 206.
- Maternal Death Study: Pleas for Instituting an Illinois State-Wide Program. C. Newberger and R. R. Cross.—p. 210.
- Osteomyelitis of Face and Skull. H. Brunner.—p. 213.
- Hydatiform Mole with Eclampsia Occurring in Fourth Month of Pregnancy. B. J. Winston.—p. 221.

Surgical Treatment of Psychoses.—Liebert and Davis review the results obtained with prefrontal lobotomy in 38 cases. Twenty-five patients improved and of the improved patients 12 were discharged from the institution. Thirteen patients remained unimproved. All of the patients subjected to prefrontal lobotomy had been ill for many years and constituted a severe behavior problem in a mental institution. Untoward effects of the operation as incontinence of urine, epileptic seizures and lack of initiative following the operation, must be expected in some cases.

Insulin and the Degenerative Changes in Diabetes Mellitus.—Hedges points out that more attention must be given to such early degenerative changes in diabetes mellitus as albuminuria, moderate hypertension and beginning retinitis, rather than to the development of arteriosclerosis in the extremi-

ties, if one is to prolong the life of diabetic persons and protect them against complications. At present little is done except attempting to control the blood sugar through the use of diet and insulin, and, while insulin may control glycemia, it does not check the development of degenerative lesions. More information is required on the need for additional insulin in diabetic patients when infection is present and more attention must be given to the acceleration of degenerative processes in diabetic patients, for at present there is no treatment for these.

Journal of Clin. Endocrinology, Springfield, Ill.

8:3-209-268 (March) 1948

- Studies in Serum Electrolytes. XVI. Changes in Serum and Body Fluids in Anorexia Nervosa. F. W. Sunderman and E. Rose.—p. 209.
- Diurnal Rhythm in Excretion of Neutral Reducing Lipids by Man and Its Relation to 17-Ketosteroid Rhythm. G. Pincus, Louise P. Romanoff and J. Carlo.—p. 221.
- Effects of Starvation on Sex Hormones in Male. E. C. Jacobs.—p. 227.
- Rapid Rat Test for Pregnancy: Ovarian Hyperemia Response as Routine Diagnostic Procedure. G. M. Riley, Marjorie H. Smith and Pearl Brown.—p. 233.
- Adrenal Cortical Hormone Excretion in Endocrine and Nonendocrine Disease as Measured by Chemical Assay. W. H. Daughaday, H. Jaffe and R. H. Williams.—p. 244.
- Relation of Obesity to Function of Thyroid Gland, Especially as Indicated by Protein-Bound Iodine Concentration in Plasma. R. H. Williams.—p. 257.
- Studies on Antihormone Specificity with Particular Reference to Gonadotropic Therapy in Female. J. H. Leatham and A. E. Rakoff.—p. 262.

Journal of Investigative Dermatology, Baltimore

10:227-300 (April) 1948. Partial Index

- Specificity of Streptococci Isolated from Patients with Skin Diseases: Studies on Pemphigus, Dermatitis Herpetiformis, Lupus Erythematosus and Erythema Multiforme: II. Dermatitis Herpetiformis. A. L. Welsh.—p. 231.
- Studies on Effect of PH and Solubility on Antifungal Properties of Fatty Acids, Trimethyl Cetyl Ammonium Pentachlorophenate and Other Agents. E. J. Foley and S. W. Lee.—p. 249.
- Method for Study of Penetrability of Liquid and Semisolid Films Used in Skin Protection. H. Eisner.—p. 273.
- Provocative Test for Assaying the Dermatitis Hazards of Dyes and Finishes Used on Nylon. A. J. Fleming.—p. 281.
- Field Trial of United States Army Fungicidal Ointment. M. Sullivan and H. A. Fishbein.—p. 293.

Journal of Nervous and Mental Disease, New York

107:313-410 (April) 1948

- Motility, Behavior and the Brain: Stereodynamic Organization and Neural Co-Ordinates of Behavior. P. I. Yakovlev.—p. 313.
- Alterations of Behavior Produced in Cats by Lesions in the Brainstem. P. Bailey.—p. 336.
- Basic Pathology of Schizophrenia. J. M. Nielsen.—p. 340.
- Studies in Electroneurosis Therapy: II. Physiologic Effects in Electroneurosis and Electro Shock. A. Simon, K. M. Bowman and Nellie Halliday.—p. 358.
- Studies in Electroneurosis Therapy: III. Psychologic Test Findings. R. E. Harris, K. M. Bowman and A. Simon.—p. 371.
- Electric Shock Therapy in General Paresis. II. C. Solomon, A. S. Rose and R. E. Arnot.—p. 377.
- Significance of Phenomenon of Extinction. S. B. Wortis, M. B. Bender and H. L. Teuber.—p. 382.
- Cerebral Localization of Psychologic Processes Occurring During a Two-Minute Experience. S. D. Ingham.—p. 388.

Journal of Pediatrics, St. Louis

32:333-478 (April) 1948

- Hunger Edema in Children. E. P. Petrides.—p. 333.
- *Sublingual Methyl Testosterone for Boyhood Emotional, Physical, and Genital Immaturity. F. E. Harding.—p. 351.
- Cerebral Complications in Pertussis. A. M. Litvak, H. Gibel, S. E. Rosenthal and P. Rosenblatt.—p. 357.
- Pediatric Deaths in Large General Hospital. R. V. Platou, J. Kometani and N. C. Woody.—p. 380.
- *Nontuberculous Pulmonary Calcification. A. D. Biggs and R. G. Rigby.—p. 393.
- Receding Chin and Glossoptosis. A Cause of Respiratory Difficulty in Infant. A. Nisenson.—p. 397.

Sublingual Methyl Testosterone for Immaturity in Boys.—Harding says that in boys with unusually small genitalia a neurosis may be caused by the fear of abnormality. Methyl testosterone enlarges all parts of the male genitalia before or during puberty. When small doses of it are given, it does not initiate the onset of puberty in a child too young for the occurrence. Methyl testosterone was administered in small daily doses to a selected group of 58 boys between the ages of 7 and 15 years. Tablets of methyl testosterone were held under the tongue or between the teeth and the check and were allowed

to dissolve slowly. They each contained 5.0 mg. of material and were cut in half or in fourths for the 2.5 mg. or 1.2 mg. doses. The total daily dose varied between 0.6 and 10 mg. Treatment was continued for two to twenty months. Genital development was considered satisfactory in all patients taking methyl testosterone. Satisfactory development of primary and secondary sex characteristics occurred. In some patients there was an increase in weight and production of greater muscular strength. The average rate of growth as determined by height was increased to 3.2 inches (8.1 cm.) per year. The neuroses due to the presence of unusually small genitalia were cured. There was less emotional immaturity.

Nontuberculous Pulmonary Calcification.—Biggs and Rigby point out that calcium deposits in the lungs or at their hilum were always considered to be pathognomonic of tuberculosis. In recent years evidence has accumulated that there are other causes of pulmonary calcification. The authors obtained consistently negative tuberculin reactions in 14 children who had calcium deposits in the chest. One child had Boeck's sarcoid involving the lungs without cough. Acid-fast bacilli were demonstrated by direct smear in the secretion aspirated through the bronchoscope in this 1 patient only. The authors regard bronchoscopic methods of study in questionable cases of tuberculosis as valuable. A thorough clinical study, including bronchoscopy and bacteriologic study of the aspirated secretions, failed to produce evidence that these children had or had had a tuberculous infection. Eight of these 13 patients with pulmonary calcification had some change in the mucous membrane at the bifurcation or in the main bronchi. Eight had a history of frequent colds or persistent coughs. Twelve of the 13 were given cutaneous tests with histoplasmin. Six of the 12 gave an immediate reaction to histoplasmin. On the basis of these observations and of reports in the literature the authors conclude that pulmonary calcification may be caused by factors other than pulmonary tuberculosis. It has not been definitely determined what these factors are, but there is suggestive evidence that a mild subclinical histoplasmosis may be one of them. Ordinary recurrent infections of the respiratory tract may be another.

Journal Pharmacology & Exper. Therap., Baltimore 92:363-466 (April) 1948. Partial Index

- Pharmacology of Compounds Structurally Related to Hydroxytyramine. A. M. Lands, V. L. Nash, B. L. Dertinger and others.—p. 369.
*Efficacy of BAL (2,3-Dimercaptopropanol) in Treatment of Experimental Lead Poisoning in Rabbits. F. G. Germuth Jr., and H. Eagle.—p. 397.
Histamine Shock in Mice Sensitized with Hemophilus Pertussis Vaccine. I. A. Parfentjev and Mary A. Goodline.—p. 411.
Acute Vascular Tolerance to Morphine, Isoinipacaine (Demerol), and Methadon (Amidone) in Dog. F. E. Shideman and H. T. Johnson.—p. 414.
Inhibition of Pancreatic Vacuolization. A. L. Tucker.—p. 421.
Improved Colorimetric Method for Estimation of Histamine. S. M. Rosenthal and H. Tabor.—p. 425.
Response of Isolated Hypodynamic Myocardium to Inotropic Drugs. L. J. Sciarini, Elizabeth M. Ackerman and W. T. Salter.—p. 432.
Isodynamic Equivalents of Digitoxin Congeners as Tested on Hypodynamic Myocardium. W. F. White, J. Belford and W. T. Salter.—p. 443.
Action of P-Aminosalicylic Acid (PAS) in Experimental Tuberculosis. W. T. McClosky, M. I. Smith and J. E. G. Frias.—p. 447.
Curariform Activity of d-N-Methyl-isochondrodendrine and d-O-Methyl-isochondrodendrine. D. F. Marsh and M. H. Pelletier.—p. 454.

BAL in Experimental Lead Poisoning.—The experiments described by Germuth and Eagle proved that BAL (2,3-dimercaptopropanol) failed to protect rabbits that had been poisoned with lead acetate. At times it actually accelerated the toxic effects of lead acetate in rabbits. The experimental lead poisoning produced in rabbits by either the subcutaneous or the intravenous injection of lead acetate differs so materially from that seen in man, with respect to the route of administration, the chemical form of the lead, the chronicity of the intoxication and the organs affected, that the results obtained with BAL in these experimental animals have no necessary significance with respect to its possible therapeutic activity in man. Despite the present complete failure of BAL to detoxify lead in rabbits, its effect on the urinary excretion of lead was so striking as perhaps to justify its cautious therapeutic trial in human cases. For two hours after a single injection of BAL at 20 mg. per kilogram of weight, the urinary excretion of lead increased

eleven to forty fold in animals with a subcutaneous depot, and three to seven fold in animals injected intravenously. This favorable effect on the excretion of lead lasted for approximately four hours after a single injection of BAL.

Kentucky Medical Journal, Bowling Green

46:73-112 (March) 1948

- Management of Fractures Below the Knee. J. P. Glenn.—p. 77.
Blood Dyscrasias in Adults: Hypersplenism. M. F. Beard.—p. 84.
Psycho Surgery. R. J. Angelucci.—p. 89.
Endemic Typhus Fever. J. T. Gilbert Jr.—p. 94.
Typhus Survey in Bowling Green, Kentucky. P. H. Harden.—p. 98.
Prophylaxis as Well as Therapeutics in Toxemia of Pregnancy. G. G. Greene.—p. 100.
Twenty-Three Cases of Pulmonary Tuberculosis Treated with Streptomycin. R. Starr.—p. 105.

Medical Annals of District of Columbia, Washington

17:191-256 (April) 1948

- Medical Preparedness in Atomic Defense. C. J. Brown.—p. 191.
Therapy of the Aged. E. J. Stieglitz.—p. 197.
Gastrointestinal Endoscopy. I. B. Brick.—p. 205.
Surgical Treatment of Hypertension. W. S. McCune.—p. 210.
Surgical Treatment of Carcinoma of Head of the Pancreas and of Thyroid: Report of a Case. P. C. Kiernan.—p. 216.
*Use of Penicillin in Weil's Disease: Report of 2 Cases. J. M. Moser Jr.—p. 219.

Penicillin in Weil's Disease.—Moser reports 2 men, aged 30 and 27, respectively, with symptoms of Weil's disease and a history of probable contact with rats while swimming and camping. Treatment with sulfadiazine had failed; penicillin in doses of 50,000 units every two hours was given for 12 doses, and after that at somewhat longer intervals. These cases suggest that penicillin is effective if given during the bacteremic phase. There is no way of making the diagnosis except by finding the leptospirae in blood smears during the first week. This is difficult for the ordinary laboratory technician. If the physician withholds the therapy until after the diagnosis has been made, the effectiveness of penicillin becomes progressively diminished and the disease may be fatal. The reason that penicillin loses its effectiveness after the onset of jaundice or nephritis is perhaps that the spirochetes take up residence in all the organs of the body and high therapeutic concentrations of penicillin cannot reach them. The author bases his belief that penicillin produced the clinical cure in the 2 cases on the definite improvement in the temperature curve within twenty-four hours after the beginning of penicillin therapy; the moderate Herxheimer reactions which the patients demonstrated after their second injection of penicillin, and the general clinical improvement. The failure of complete clinical recovery in the first case as manifested by fatigability and headaches suggests the existence of low grade hepatitis, which took six months of good diet to clear up.

Michigan State Medical Society Journal, Lansing

47:363-456 (April) 1948

- Cytologic Study of Bronchial Secretions in Diagnosis of Bronchogenic Carcinoma: Short Review. H. M. Smathers.—p. 393.
Primary Carcinoma of Lung: Report of 100 Cases. N. Levitt.—p. 395.
Diagnosis and Treatment of Breast Tumors. F. A. Collier.—p. 399.
Tuberculosis Child: Reflections on Problems of Prophylaxis and Recent Advances in Therapy. R. V. Platon.—p. 400.
*Mercurial Diuretics in Paroxysmal Nocturnal Dyspnea. R. A. Sokolov.—p. 404.
Proctologic Principles in Hemorrhoidectomy. J. F. Wenzel.—p. 408.
Potentialities and Limitations of Prenatal Pediatrics. C. A. Smith.—p. 411.

Mercurial Diuretics in Paroxysmal Nocturnal Dyspnea.—Sokolov presents observations on 47 patients with evidence of left ventricular failure and, more particularly, paroxysmal nocturnal dyspnea. The treatment of the individual attack of paroxysmal dyspnea was along conventional lines. Morphine in $\frac{1}{4}$ to $\frac{1}{2}$ grain (16 to 32 mg.) doses was given hypodermically, usually in conjunction with $\frac{1}{100}$ grain (0.6 mg.) of atropine. When indicated, oxygen via tent was also supplied. If the patient had not been previously digitalized, rapid digitalization was induced by giving 1.2 mg. of digitoxin in twelve hours, to be followed by a daily maintenance dose of 0.1 to 0.2 mg. Bed rest was enforced for a varying length of time. If the patient was overweight, a low caloric diet was prescribed. Regardless of the patient's weight, a salt-poor regimen was instituted.

Many of these patients ultimately required more energetic diuresis, so that mercurial diuresis was made an integral part of the treatment in all cases in which no contraindication existed. Acidifying agents, such as ammonium chloride, enhance the diuretic effect of the mercurials. The mercurial diuretic used was meralluride. The first dose of meralluride is 1 cc. intravenously. This is followed in four days by a 2 cc. dose. Thereafter injections of 2 cc. are given once a week until the patient is considered stabilized. At this point the interval between injections is lengthened as much as possible. Mercurials should not be given in the presence of severe renal disease, in severely dehydrated patients or those with depleted serum chlorides, in the moribund, in the presence of shock associated with recent myocardial infarction, in patients having previously exhibited idiosyncrasy to the drug and in the presence of large amounts of digitalis-containing edema fluid. The author emphasizes that, although this treatment is not new, its value has been inadequately emphasized.

New England Journal of Medicine, Boston

238:583-614 (April 22) 1948

- *Carcinoma of Stomach. C. E. Welch and A. W. Allen.—p. 583.
- Complete Heart Block. Study of Two Cases in Veterans of World War II. C. Fisch.—p. 589.
- Vaccination Against Influenza A and B. Comparison of Reactions, Doses and Titer Responses of Two Different Vaccines in Infants and Children. R. I. Lienke, P. Crump and J. M. Adams.—p. 593.
- Acute Meningitis Caused by *Neisseria Sicca*. Charlotte Baunser and J. Brem.—p. 596.
- Cancer. G. W. Taylor.—p. 598.
- Mucous Carcinoma of Stomach, Signet Ring Type.—p. 602.
- Adenocarcinoma of Ascending Colon, with Metastases to Liver. Thrombophlebitis of Both Femoral and Iliac Veins and of Inferior Vena Cava.—p. 604.

Carcinoma of Stomach.—Welch and Allen review observations on patients with carcinoma of the stomach admitted to the Massachusetts General Hospital during the ten year period 1937 to 1946. Comparison with earlier reports shows that the delay before treatment has remained unchanged, averaging five months. A more aggressive attitude toward gastric ulcer has increased the recognition of early cancer of the stomach. The introduction of a transthoracic approach and the wider use of total abdominal gastrectomy have increased the number of cases available for resection. The mortality for gastric resections for cancer has dropped to a present level of 17 per cent for the entire series and to 11 per cent in the last five year period. The mortality for subtotal resections in which all gross disease is removed has been 3 per cent in the last five year period. Meanwhile, the number of patients not operated on has declined, so that 75 per cent have an operation. Fifty per cent of the total have a gastrectomy, either subtotal or total. The best palliative operation, if gross disease cannot be removed, is subtotal gastrectomy. The five year survival rate is now 7 per cent of the entire group that enters the hospital. The most fruitful method now available to increase the number of cures of cancer of the stomach is to reduce the delay from onset of symptoms to surgical intervention.

Public Health Reports, Washington, D.C.

63:501-528 (April 16) 1948

- Program of National Cancer Institute. W. Carrigan and Ora Marshino.—p. 501.

63:529-556 (April 23) 1948

- Employment of Soluble Antigen in Screening Tests for Typhus Complement Fixation. T. O. Berge.—p. 529.
- Statistical Studies of Heart Diseases, Part I. Heart Diseases and Allied Causes of Death in Relation to Age Changes in the Population. I. M. Moriyama and Mary Gover.—p. 537.

63:557-592 (April 30) 1948

- Operation of United States Public Health Service Malaria Control Program. F. Tetzlaff.—p. 557.
- *Dental Effects of Community Waters Accidentally Fluorinated for Nineteen Years: II. Differences in Extent of Caries Reduction among Different Types of Permanent Teeth. H. Klein.—p. 563.
- Diphtheria Epidemic in Utah in 1947. A. A. Jenkins.—p. 573.
- Appearance of "Minimus" Type Diphtheria in Utah. T. W. Galbraith, R. S. Fraser and E. H. Bramhall.—p. 577.

Dental Effects of Fluorinated Waters.—The study reported by Klein is based on examination of nearly 2,000 children residing in New Jersey and more than 6,000 children of Hagerstown, Md. Of the New Jersey children ranging in

age from 5 to 19 years, 874 were born and reared in a fluoride area, 725 moved into the fluoride area at various ages subsequent to birth in places outside the fluoride areas and 340 children were lifetime residents of the nonfluoride area. The depressant effect of fluorides on caries may be approximately of equal potential for all the different types of teeth. Because of the different gradients in the characteristic or expected caries susceptibilities of the different teeth, the resultant effect may be a variation in the per cent reduction of caries among the different teeth. Consideration of the differences in caries reduction among the different teeth leads to the view that the differential effects are perhaps related to basic differences in the characteristic susceptibilities of the different teeth. Even after prenatal exposure and a postnatal residence of fifteen to nineteen years in a fluoride environment, caries attack is reduced only by about a third of normal expectation in the lower molar teeth of lifetime residents. Although this is a significant reduction, particularly from the point of view of the total need for dental service in the population, it is necessary to recognize that approximately two thirds of the treatment problem for caries still arises among molars in the fluoride area.

Rhode Island Medical Journal, Providence

31:153-220 (March) 1948

- The Position of General Practitioner Today. J. M. Faulkner.—p. 167.
- Leaves Off The Tree. R. Fitz.—p. 171.
- Graduate Medical Education and Hospital Economics. O. G. Pratt.—p. 177.
- Admission to Medical Schools. D. O'Hara.—p. 186.
- Intern Training in Hospital System. C. F. Wilkinson Jr.—p. 201.

31:227-276 (April) 1948

- Conquest of Puerperal Infection 1846-1946. E. S. Brackett.—p. 235.
- Tuberculosis in Providence. P. F. Harrington.—p. 240.
- Symposium on Rheumatic Fever and Heart Disease. E. F. Kelly, Banice Feinberg, F. V. Corrigan and J. F. Kenney.—p. 243.
- Responsibility of Hospital Administrator to Other Community Health Agencies. I. V. Hiscock.—p. 250.

Surgery, Gynecology and Obstetrics, Chicago

86:513-640 (May) 1948

- Aortic Valvulotomy: Experimental Methods and Early Results. H. G. Smithy, H. R. Pratt-Thomas and H. P. Deyerle.—p. 513.
- *Studies on Vagotomy in Treatment of Peptic Ulcer: II. Clinical Evaluation. K. A. Meyer, P. A. Rosi and I. F. Stein Jr.—p. 524.
- Steel Wire Sutures, Local Anesthesia, and Immediate Ambulation in Treatment of Hernia. G. H. Pratt.—p. 530.
- Studies on Spinal Cord Injuries: III. Altered Reflex Activity. J. Martin and L. Davis.—p. 535.
- Atypical Adynamic Ileus Apparently Caused by Nutritional (Thiamin Chloride) Deficiency: Report of 6 Cases. D. J. Leithausen.—p. 543.
- Observations on Use of Gelatin Sponge in Closure of Experimentally Produced Defects of Bronchus. C. R. Hanlon.—p. 551.
- *Discrepancies in Myelography: Statistical Survey of 200 Operative Cases Undergoing Pantopaque Myelography. W. B. Seville, W. H. Moretz and W. D. Hankins.—p. 559.
- Wound Healing in Early Ambulation. H. P. Royster, Lillian I. McCann and A. Sloan.—p. 565.
- Differential Spinal Block: IV. Investigation of Intestinal Dyskinesia, Colonic Atony and Visceral Afferent Fibers. S. J. Sarnoff, Julia G. Arrowood and W. P. Chapman.—p. 571.
- Biologic Chemistry of Wound Healing: I. Effect of dl-Methionine on Healing of Wounds in Protein-Depleted Animals. S. A. Localio, Margaret E. Morgan and J. W. Hinton.—p. 582.
- Tumors of Testicle. H. R. Sauer, E. M. Watson and E. M. Burke.—p. 591.
- *Correction of Hypoproteinemia by Administration of Plasma and Blood. J. G. Allen, G. Bogardus, W. Egner and D. B. Phemister.—p. 604.
- Electrocardiogram in Biliary Tract Disease and During Experimental Biliary Distention: Clinical Observations on 26 Patients. G. B. Hodge and A. L. Messer.—p. 617.

Vagotomy in Peptic Ulcer.—Meyer and his associates report 35 cases in which previous medical or surgical management had failed to give relief from ulcer pain. There were 16 instances of previous perforation. Nineteen patients had had previous bleeding. Repeated attacks of severe epigastric pain were present in 31 of the 35 patients, and in 12 the pain was intractable. Duodenal ulcer was present in 26 patients, marginal ulcer in 7 patients; 1 patient had a gastrojejunal colic fistula and 1 had a prepyloric ulcer. The transthoracic approach was employed in the first 9 cases and the transabdominal approach in the remaining 26. The latter is now preferred, because of several advantages. All patients had immediate relief from ulcer pain. Thirty-one of the 35 are leading an

unrestricted life for the first time in many years. Dietary and medical treatment has been completely eliminated. The majority of patients noted a change in the bowel habit. They had one or two soft bowel movements a day, whereas preoperatively almost every patient gave a history of constipation. Thirty-one patients expressed themselves as being well satisfied with the results. One patient died because of uremia and nephrosis which followed a blood transfusion. Recurrence of ulcer symptoms with positive roentgen evidence of peptic ulcer occurred in 4 cases. The symptoms of cardiospasm were noted in 3 patients, but were spontaneously relieved. The most frequent and disturbing complication was gastric retention and distention, but this has been controlled. The permanency of the altered gastric function following a complete vagotomy is not yet certain, and little is known of the effect of vagotomy on the other organs innervated by the vagi. The use of vagotomy should be limited until more information is available. Complete vagotomy is the method of choice in marginal ulcer following gastric resection.

Discrepancies in Myelography.—Scoville and his associates had gained the impression that myelography yields equivocal findings in at least 25 per cent of the cases. This is at variance with published statistics. They analyze 200 consecutive cases in which patients were subjected to pantopaque myelography and operation for a lumbar ruptured intervertebral disk at the Cushing General Hospital. Four cases of lumbar spinal tumors were excluded from the statistics. Ruptured disks were found in 173 of the remaining 196 patients operated on. Findings in the 23 other cases were swollen nerve roots, adhesions, bony ridges, one fractured facet and, more commonly, nothing. Double disks were found in 11 per cent. Over-all errors occurred in 65 out of 196 cases. In order to rule out the personal equation from these diagnostic errors, the authors made a comparison with two surveys made by other investigators. Clinical evidence of a ruptured disk is more important than is myelographic evidence. A positive myelogram is more important than a negative one. A normal myelogram in the face of clinical evidence of a ruptured disk will be wrong three out of four times. Myelography fails to rule out the presence of a laterally placed lumbosacral disk. When myelography is used as the sole diagnostic criterion, the over-all error is in the neighborhood of 25 to 35 per cent in contrast to the 6 to 8 per cent cited in the literature. The authors will continue to use myelography routinely on all persons suspected of having ruptured disks, but will tend to discount all normal myelograms if contradicted by the clinical findings.

Correction of Hypoproteinemia by Plasma and Blood.—Allen and his associates report a study of 9 hypoproteinemic patients who were given large volumes of plasma in an endeavor to elevate the plasma proteins. Whole blood was sometimes given to correct anemia, but in all but 2 patients the greatest source of parenteral protein was plasma. The amounts of plasma, usually given daily, were large as measured by current practice, but the amount of nitrogen given by this method was less than that advocated when protein hydrolysates are used for this purpose. The increase in the plasma protein concentration was rapid after these quantities of plasma and blood were given. Normal values were usually established within five to seven days. Nitrogen balance studies and plasma volume changes in 6 of these patients showed that most of the transfused plasma probably left the blood stream within a day or two. That which could not be accounted for on the basis of an increase of total circulating plasma protein may possibly have been recast as tissue protein, since there was little, if any, evidence of a latent increased nitrogen excretion. Larger amounts of plasma and blood were required to elevate the plasma protein concentration in the more severely starved patient than in the better nourished one, even though the plasma protein concentrations were reduced to similar levels in both groups. This work suggests that the fear of over-transfusion is unwarranted except when the cardiovascular reserve is reduced. It emphasizes the wisdom of using blood in some patients in place of plasma because of the gain in oxygen-carrying cells and the possible utilization of hemoglobin to form tissue proteins.

Union Médicale du Canada, Montreal

77:517-652 (May) 1948. Partial Index

- Prevention of Whooping Cough by Vaccination. L. Forté and A. Frapier.—p. 528.
*Commentary on Tuberculosis of Larynx. J. Brahy.—p. 537.
Spontaneous Abortion and Its Treatment with Progesterone. A. Cousineau.—p. 543.
Biliary Peritonitis. R. Grignon.—p. 547.
Medical Applications of Genetics. M. Moreno.—p. 551.
Physical Therapy and Occupational Therapy in Psychiatry. J. Faure.—p. 554.
Simple Skin Grafts. G. E. Cloutier.—p. 556.

Tuberculosis of Larynx.—According to Brahy, tuberculosis of the larynx is to be considered as a complication of pulmonary tuberculosis exclusively, because primary tuberculous lesions of the larynx have not been demonstrated and tuberculosis of the larynx has not been reported in association with tuberculosis of bones, peritoneum, meninges or eyes. For several years the incidence of advanced cases of pulmonary tuberculosis decreased as the result of a successful campaign against this disease. It also explains the reduced number of cases with laryngeal lesions, which, however, may be observed in two thirds of those cases of pulmonary tuberculosis which cannot be controlled. The age groups between 25 and 40 years are affected most frequently. Laryngeal lesions are observed three times more often in men than in women. One hundred patients with pulmonary tuberculosis, many of whom presented laryngeal lesions, were treated with streptomycin at the hospital of the Sacré-Coeur in Cartierville, Montreal. Five milligrams of the drug was administered by intramuscular route every morning and evening for three weeks. In 1 male patient aged 40 with bilateral pulmonary cavities and considerable involvement of the larynx, theodynophagia subsided completely after the second week of this treatment, and his body weight was increased 25 pounds (11.3 Kg.) after three weeks of treatment. The left half of the larynx was practically healed, while diffuse edema of the right half was still present. The cavity of the right lung did not appear cleared on roentgenologic examination, while the aspect of the left lung was satisfactory. Although not all the other patients were improved to the same degree, it is believed that streptomycin has a favorable effect on the ulcerations of the larynx, leaving a uniform and smooth mucosa. This effect is more pronounced with extensive than with small lesions. The present tendency is to continue the treatment with streptomycin for a period of one hundred and twenty days.

Virginia Medical Monthly, Richmond

75:159-212 (April) 1948

- Miscellaneous Observations on Management of Allergic Patient. E. L. Alexander.—p. 161.
Medical Public Relations. J. T. T. Hundley.—p. 167.
Management of Diabetic Coma. J. H. Smith.—p. 171.
Blood Disturbances and Anuria Resulting from Severe Burns. P. J. DeVries and H. Allen.—p. 173.
Medical Care and Hospital Administration. P. S. Smith.—p. 179.
Indications for Broncho-Esophagology. H. D. Hoskins.—p. 182.
Clinical Review of Papillary Adenocarcinoma of Ovary. G. Speck.—p. 185.
Anemia Problem in Everyday Practice. H. C. Brownley.—p. 191.
Cancer Following Burn Scars. H. Cantor.—p. 197.
Evaluation of Annual Serologic Test Performance Studies Conducted by Virginia State Health Department from 1940 through 1946. E. M. Holmes Jr.—p. 200.

75:213-262 (May) 1948

- Medical Legislation in 1948 Virginia General Assembly. R. C. Duval Jr.—p. 213.
Contributions of 1948 General Assembly in Field of Health. L. J. Roper.—p. 217.
Management of Early Syphilis. D. C. Smith and R. C. Thompson.—p. 219.
Q Fever: Case Report. T. J. McGurl, J. P. Williams.—p. 225.
Treatment of Phlebitis and Its Complications. A. Bigger.—p. 229.
Report of Infestation of Intestinal Parasites Throughout Virginia. Lula W. Garst and A. W. Bergtson.—p. 231.
Vocational Rehabilitation a Resource for Physicians. R. M. Hoover.—p. 233.
Hemoglobin Studies on Albemarle County School Children. T. S. Englar, Ruth Blakely and W. Wilkins.—p. 236.
Microscopic Examination of Exfoliated Cells as an Aid in Early Cancer Diagnosis. G. Cooper Jr.—p. 241.
Management of Peripheral Vascular Disease. N. Bloom.—p. 248.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

32:193-256 (April) 1948. Partial Index

- Clinical Report on Miners' Nystagmus. Dorothy A. Campbell.—p. 193.
Dark Adaptation of Coal Miners Suffering from Nystagmus. F. W. Sharpley.—p. 199.
Psychiatric Aspect of Miners' Nystagmus. I. E. S. Stern.—p. 209.
Binocular Vision in Miners. Dorothy A. Campbell, Renee Harrison and Jean Vertigen.—p. 226.

British Medical Journal, London

1:627-672 (April 3) 1948

- Public Health Laboratory Service. G. S. Wilson.—p. 627.
Identification of Medical Documents. L. Hophen, M. M. Johnstone and K. W. Cross.—p. 632.
Treatment of Hyperidrosis. H. A. Haxton.—p. 636.
Immediate Prostatectomy for Retention of Urine. G. A. Bagot.—p. 638.
Some Simple Observations on Transfusion Reactions. J. Wallace and R. D. Richards.—p. 640.
Iso-Immunization by Blood Factor N. L. De Kromme and L. A. M. Van Der Spek.—p. 643.

1:673-718 (April 10) 1948

- Surgical Teaching in America. A. E. Porritt.—p. 673.
Public Health Laboratory Service: Origin and Development of Public Health Laboratories. G. S. Wilson.—p. 677.
Guterman Test in Threatened Abortion: Report Based on 100 Consecutive Cases. S. Bender.—p. 683.
Guterman Test for Pregnancy. W. H. H. Merivale.—p. 685.
Hydrolysis of Protein in Cartilage and Bone. P. Pincus.—p. 687.
Yearly Re-Examination of Factory Group by Mass Miniature Radiography. W. Pointon Dick.—p. 689.

Edinburgh Medical Journal

55:129-192 (March) 1948

- Short History of Pneumococcus with Special Reference to Lobar Pneumonia. J. T. Smell.—p. 129.
Preparation of Iso-Osmotic Phosphate Buffer Solutions. E. B. Hendry.—p. 142.
Mortality from Appendicitis in Scotland 1901-45. J. B. De W. Molony.—p. 153.
Symposium on Headache as a Symptom: I. General Considerations. W. A. Alexander.—p. 168.
Id.: II. Migraine. J. K. Slater.—p. 173.
Id.: III. Psychologic Aspect. W. M. C. Harrowes.—p. 176.
Id.: IV. The Eyes and Headache. H. M. Traquair.—p. 180.
Id.: V. Headache from Sinus Infections. A. B. Smith.—p. 183.

Lancet, London

1:505-544 (April 3) 1948

- *Measured Radical Gastrectomy: Review of 505 Operations for Peptic Ulcer. A. H. Visick.—p. 505.
Penicillin and Sulfonamides in Typhoid Fever: Experience of Physicians in Military Hospitals in Middle East. C. G. Parsons.—p. 510.
Physiologic Jaundice of Newborn. Some New Measurements of Factors Concerned. P. L. Mollison.—p. 513.
Combined Chaulmoograte and Sulphone Treatment of Leprosy and Tuberculosis. L. Rogers.—p. 515.
Normal Temperatures in Old Age. T. H. Howell.—p. 517.
Treatment of Angina of Effort with Androgens. V. K. Summers.—p. 519.

1:545-580 (April 10) 1948

- *Penicillin and Sulfathiazole in Typhoid Fever. Clinical Trial. G. Bevan, Marjorie V. N. Sudds, R. Evans and others.—p. 545.
Weight Changes in Pregnancy. J. A. Scott and B. Benjamin.—p. 550.
*Measured Radical Gastrectomy. A. H. Visick.—p. 551.
Sterile Splenic Abscess After Relapsing Fever. L. A. Nasy.—p. 555.
Reducing Substances in Urine in Pregnancy and Early Puerperium. H. E. Archer and B. J. Haram.—p. 558.
Primary Atypical Pneumonia: Small Highly Infective Outbreak. B. G. Alton and M. D. Hickey.—p. 559.

Penicillin and Sulfathiazole in Typhoid.—Bevan and associates point out that considerable interest was aroused when Bigger in 1946 found that typhoid bacilli are effectively inhibited in the test tube by the combined action of penicillin and sulfathiazole. A typhoid outbreak in which the vehicle of infection was ice cream infected by a urinary carrier offered an opportunity for a trial of the combined penicillin-sulfathiazole treatment. The 39 patients who received courses of combined penicillin and sulfathiazole, similar to those found effective by McSweeney in 1946, did not show the speedy disappearance of toxemia and subsidence of pyrexia described by McSweeney. Three small groups of patients treated with penicillin-sulfa-

thiazole were compared with three untreated control groups. There was no evidence of an appreciable clinical effect of the drug treatment. There were no fatalities in the largest group of 25 treated patients, but 5 of the patients whose condition caused the greatest anxiety had been given Felix's "Vi+O" antityphoid serum. A considerable proportion of patients yielded positive blood cultures shortly after completion of their courses of penicillin-sulfathiazole treatment. Fecal excretion of typhoid bacilli during convalescence was not shorter in the treated groups than in the controls. The typhoid strain responsible for the reported outbreak was not more resistant to the action of penicillin and sulfathiazole than were four other strains with which it was compared in tests in vitro. The authors warn against the indiscriminate use of penicillin and sulfathiazole in the treatment of typhoid.

Measured Radical Gastrectomy.—In this review of 505 operations for peptic ulcer Visick asserts that the essential point of technic of a measured radical gastrectomy is division of all but one of the vasa brevia and all branches of the left gastro-epiploic artery. This makes it possible to leave a small devascularized gastric remnant $1\frac{1}{2}$ inches (3.8 cm.) and 3 inches (7.6 cm.) long on the lesser and greater curvatures, respectively. A measured radical gastrectomy differs from a conventional three-quarters resection in three respects: (1) the area of stomach which remains can be measured and controlled with accuracy; (2) the gastric remnant is extensively devascularized, and (3) in 98 per cent of cases permanent relative achlorhydria is produced. The operative mortality for the last 430 gastrectomies was 3.7 per cent. A penetrating ulcer caused twice the operative mortality of a nonpenetrating ulcer. If the history was over five years, the operative mortality was increased two and one-half times. One patient among 155 under the age of 40 died. The operative mortality among patients aged 40 to 49 was 5 per cent; aged 50 to 59, it was 5.8 per cent, and 60 and over, 7.1 per cent. Of the 430 patients examined from six months to twelve years after operation 95.1 per cent showed satisfactory results. The year by year continuous follow-up indicates that results improve with time. The proportion of patients who are free of symptoms at six months (47 per cent) rises to 63 per cent at forty-two months after operation. Women were more liable to have minor symptoms resulting from operation. In spite of wide resection macrocytic anemia has not been discovered. No ulcer recurred later than eighteen months after gastrectomy.

Medical Journal of Australia, Sydney

1:321-356 (March 13) 1948

- The Individual and the Environment. A. A. Abbie.—p. 321.
Hypothalamus and Obesity. C. Brooks.—p. 327.
Inguinal Hernia: Review of Treatment. G. Broonan.—p. 331.
Tuberculosis of Upper Part of Respiratory Tract, with a Report of Case. D. B. Rosenthal.—p. 335.
*Four Cases of Carditis Occurring in Children and Associated with Administration of a Foreign Serum. Joan Storey.—p. 337.

Carditis Following Administration of Foreign Serum.—According to Storey there is a close analogy between certain of the symptoms of rheumatic fever and those of serum sickness. Polyarthritides, fever, rashes and lymph node enlargement may occur in both. In view of the present theory that rheumatic fever may be akin to an allergic reaction, a hypersensitivity to the hemolytic streptococcus group A, the author pursued the analogy of the 2 cases more closely. The greatest danger in rheumatic fever is in the damage done to the heart, and this is not ordinarily a feature of serum sickness. The 4 cases cited by the author have in common the development of polyarthritides, fever, raised blood sedimentation rate and carditis following the injection of a foreign serum. In the last 3 cases serum sickness occurred in the interval between the injection of the serum and the discovery of carditis. It is well within the bounds of possibility that these children suffered an attack of rheumatic fever in which the "Phase 1" infection passed unnoticed and that the serum sickness, which developed more quickly than usual after injection of serum, was purely coincidental. This is especially so in view of the fact that the administration of tetanus antiserum is a fairly common procedure and that these 4 cases were selected from over a thousand histories of rheumatic fever investigated. A second explanation

is that given by Wadsworth and Brown, who, in discussing their case of carditis, pointed out that there is much to favor the assumption that carditis may have been reactivation of sub-clinical rheumatic fever by protein shock.

1:357-388 (March 20) 1948

Anne MacKenzie Oration. F. S. Hone.—p. 357.
Protein Deficiency and Use of Human Serum in Its Treatment
J. Ishister.—p. 362.

1:389-420 (March 27) 1948

*Pneumonokoniosis in New South Wales Coal Miners. A. T. Nisbet.—p. 389.
Occlusive Arterial Disease. E. Downie.—p. 396.
Acanthosis with Report of an Additional Case. A. Bassor.—p. 400.
Method for Equilibration of Blood with Gas Mixture. Alice J. Palmer and M. J. Morrissey.—p. 401.

Pneumonokoniosis in Coal Miners.—Nisbet describes how the "Special Pneumonokoniosis Board of New South Wales" operates, and attempts to evaluate the cause of fibrosis of the lung tissue on the basis of nearly fifteen years' experience as radiologist to this special board. It is unfortunate that the two different terms "reticulosis" and "nodular fibrosis" are used by separate authorities to mean the same thing, anthracosis. Silica is the cause of the disability in coal miners as well as in other miners. Miners working in a pit with the greater content of silica in the coal or seam, and therefore in the dust, will show the greater percentage of cases of pulmonary disease. The quartz miner may contract silicosis in five to seven years; the metal worker without proper precautions in under ten years; the asbestos worker, the flour miller and others take longer still. The soft coal miner must work at least twenty years before manifestations of anthracosis occur. The incidence among coal miners in New South Wales of superadded tuberculosis appears far less than that among the remainder of the population. The total incidence of men with incapacitating pulmonary fibrosis due to dust was 4.90 per thousand colliery employees per year.

Proceedings of Royal Society of Medicine, London

41:187-260 (April) 1948. Partial Index

*Serious Limitations and Erroneous Indications of Biopsy in Diagnosis of Tumors of Bone. J. F. Brailsford.—p. 225.
Surgery in Treatment of Rheumatoid Arthritis and Ankylosing Spondylitis. W. A. Law.—p. 251.

Limitations of Biopsy in Bone Tumor.—Brailsford shows that it is erroneous to suppose that biopsy will permit the surgeon to establish whether a bone tumor is benign or malignant, when clinical and roentgenographic observations by competent observers have failed to clarify this question. Actually biopsy may add conflicting evidence which will delay the accurate diagnosis. Ultimate resolution of a bone tumor which had clinical, roentgenographic and even histologic appearances of malignancy is the best evidence of simplicity. In view of the not uncommon occurrence of such cases, it is unjustifiable to record lesions as "fully proved" malignant tumors if amputation results in cure. A malignant bone tumor appears to indicate a local expression of a constitutional disturbance, which may disappear when the patient is given the essential corrective; for in spite of the earliest amputation similar lesions may develop at any time after, even with twenty years' symptomless interval. Yet primary lesions and the multiple associated lesions which have the features of metastases may resolve completely or sufficiently to permit of the average duration of symptomless normal life. The response of carcinomatous metastases from some primary carcinomas in the breast or prostate to diethylstilbestrol gives hope that some such hormone will be found to cure sarcoma. In the investigation of bone tumor particular attention must be paid to hereditary dysplasia or dystrophy, the possibility of vitamin deficiency, endocrine or blood disorder, infection or trauma. If the roentgenographic appearances indicate a simple lesion the appropriate treatment should be given. If the lesion has the roentgenographic features which suggest malignancy the only treatment which present imperfect knowledge dictates is amputation. This is an irrevocable procedure, the success of which cannot be predetermined. As the roentgenographic appearances can be closely mimicked by inflammatory or deficiency and other disorders, it would be reasonable in any doubtful case to give a course of appropriate

medication, and if this fails, a course of high voltage roentgen therapy. Even when it is established beyond doubt that the tumor is malignant and amputation is decided on, there appears to be some justification in preceding this with a full sarcoma dose of roentgen rays.

Thorax, London

3:1-52 (March) 1948

Hydatid Disease of Lung. A. Logan and H. Nicholson.—p. 1.
Dissociated Paralysis of Diaphragm Following Phrenic Crush and Pneumoperitoneum. W. Fox.—p. 15.
*Peptic Ulcer of Esophagus. P. R. Allison.—p. 20.
Calcified Foci Within Thorax of English Children. B. C. Thompson.—p. 43.
Intra-Pulmonary Calcification and Histoplasmin Sensitivity. B. H. McCracken.—p. 45.
Cavernous Hemangioma of Lung: Report of Case. W. P. Cleland.—p. 48.

Peptic Ulcer of Esophagus.—Allison shows that for a long time peptic ulceration of the lower part of the esophagus did not receive proper attention, but more accurate observation in recent years has led to more frequent diagnosis of these ulcers. Seventy-four instances of this condition have been studied in the thoracic surgical unit at the General Infirmary at Leeds. Dysphagia always more marked for solid foods than for liquids, was the symptom that brought most of these patients to the hospital. Dyspepsia was present in about three fourths of the patients. It occurred in 1 of 3 forms: (1) high epigastric discomfort associated with high acid secretion and related to disturbances of gastric motility; (2) burning pain behind the sternum caused by acid bathing the lower end of the inflamed esophagus, and (3) a more boring type of pain passing into the back between the shoulder blades and often made worse by flexion of the spine. Diaphragmatic defect is the most important etiologic factor. Heterotopic gastric mucosa in the esophagus accounts for few. Congenitally short esophagus occurs but rarely; it has not been seen in this series. Defects in the diaphragm allow herniation of the cardia into the mediastinum and so render ineffective the mechanism for keeping acid out of the esophagus. These hernias may be congenital (congenital short esophagus), infantile or acquired. There are 7 examples in infants in the present series. The acquired group includes 4 patients in whom ulceration followed gastroesophageal anastomosis after excision of carcinoma of the cardia.

Tubercle, London

29:73-96 (April) 1948

*Significance of Tuberculin Sensitivity. I. Bluhm.—p. 73.
Mass X-ray and Health Propaganda. Jocelyn Goldsborough.—p. 82.
BCG Vaccination of Nurses. J. Heimbeck.—p. 84.

Significance of Tuberculin Sensitivity.—In order to find out whether there exists a connection between the size of the tuberculin reaction and the tuberculous infection, Bluhm studied a series of healthy persons and of persons with tuberculosis. The investigation has been carried out at the Central Dispensary of Stockholm. He employed dosages of 0.05 mg. of old tuberculin. The sensitivity has been evaluated by measuring the length and breadth of the red papule. In persons without manifest tuberculosis, who live in a milieu in which tubercle bacilli are to be found, tuberculin sensitivity is usually increased. If the source of infection is removed, the reaction decreases. The cause of hypersensitivity is probably a continuous exposure to tubercle bacilli. Thus if persons without tuberculosis prove hypersensitive, the environment should be investigated. In persons with manifest tuberculosis there is a certain regularity in the fluctuation of the tuberculin reaction. In persons with erythema nodosum and primary pulmonary tuberculosis tuberculin sensitivity is usually much increased. Sensitivity seems to be maximum in an early phase of the infection. Tuberculin sensitivity shows a gradual decrease on repeated testing. In patients with exudative pleurisy the reaction is comparatively low. In pulmonary tuberculosis sensitivity is stronger in the exudative than in the productive cases. In healed tuberculosis exposure to tuberculosis may bring about an increase in the reaction even though no fresh lesions appear. In pulmonary tuberculosis with cavities, in which the lesions are productive or exudative-productive, sensitivity is also low. It seems that the variation in sensitivity does not depend so much on whether the disease is extensive, progressive or regressive as on whether it is in an exudative or a productive phase.

Acta Medica Scandinavica, Stockholm**130:1-106 (March 10) 1948. Partial Index**

- Investigations on Acute Infections of the Respiratory Tract: IV. Experimental Studies on Effect of Small Doses of Sulfonamides in Respiratory Tract Infections. G. Löfström.—p. 1.
- Clinical Problems Concerning Fatty Liver and Methylation Processes. P. Astrup.—p. 12.
- Myocardial Infarction Resulting from Intravenous Administration of Hypertonic Solution of Sodium Chloride to Patients with Arteriosclerosis Obliterans of Lower Extremities.—p. 26.
- *Porphyrin in Urine as First Symptom of Lead Poisoning. C. D. de Langen and J. A. G. ten Berg.—p. 37.
- Resorption of Penicillin After Inhalation. P. Dragsted and M. Schwartz.—p. 45.

Porphyrin in Urine as First Symptom of Lead Poisoning.—De Langen and ten Berg found that increased excretion of porphyrin in the urine was an early sign of lead poisoning among the population of a district in which the water contained comparatively large quantities of lead. The semiquantitative method found useful in these investigations requires 20 cc. of urine, to which are added some drops of glacial acetic acid and 2 cc. of ether. The test tube is shaken and is examined under ultraviolet light, in which the layer of ether fluoresces. In the presence of a normal porphyrin content of the urine the fluorescence is light blue to green, but in the presence of increased porphyrin content gradually deepening red fluorescence appears as the porphyrin content increases. In case of an equivocal result a quantitative method can be employed. This method is also described. The aforementioned method appeared to be more reliable for detecting the first signs of lead poisoning than the basophile granulation of the erythrocytes. This was proved (1) by a comparative examination of both criteria in 87 persons who all had more or less high excretion of porphyrin due to intake of lead and (2) by an experimental examination of normal persons taking predetermined quantities of lead. The authors are convinced that in the routine control of workers in the industries using lead the semiquantitative porphyrin method is much better than looking for basophile granulation.

Acta Radiologica, Stockholm**29:189-278 (March 31) 1948. Partial Index**

- *Influence of Castration by Roentgen Rays on Carcinoma of Breast. V. E. Thayssen.—p. 189.
- *Protrusion of Acetabulum as Complication of Labor. J. Petersen.—p. 205.
- Roentgen Diagnosis of Fluid in Frontal and Sphenoidal Sinuses. D. Turesson.—p. 215.
- Microcolon: With Report of Two Cases. J. Zimmer.—p. 228.
- Roentgen Examination in Acute Dilatation of Stomach. J. F. Dahl.—p. 237.
- Treatment of Keloids at Radiumhemmet 1921-1941. F. Jacobsson.—p. 251.

Influence of Roentgen Castration in Carcinoma of Breast.—Thayssen states that at the Radium Center in Copenhagen several hundred patients were treated between 1934 and 1943 for cancer of the breast with metastases. Of these, 99 were given local treatment of both the primary tumor and the metastases, and underwent roentgen castration some time after the appearance of the metastases, whereas the others got only local roentgen treatment. It was found that 40 per cent of the castrated patients were still living two years after the appearance of the metastases as against only 11 per cent of 100 controls. Of 74 patients given roentgen treatment before or after operation and castrated, 28 per cent were alive five years after the operation, as against 8 per cent of the controls. On the basis of 79 urinalyses for gonadotropin and estrogen it is shown that the castration may have a highly beneficent effect even in cases in which the estrogen output was low also before the castration.

Protrusion of Acetabulum in Labor.—Petersen says that although it had been suggested many years ago that protrusion of the acetabulum could be the cause of dystocia, no case seems to have been reported until one was observed at the author's hospital in 1944. The patient was a primipara, aged 32, in whom delivery was protracted (about forty-five hours) and in whom both the clinical and the roentgenologic examinations, as well as the pressure traces on the skull of the child, make it probable that the protraction was due to protrusion of the patient's acetabulum. The chief feature of protrusion of the acetabulum or Otto's disease is an abnormally strong dome-shaped projection of the floor of the acetabulum into the small pelvis. The author discusses the cause of the disease.

Analecta Medica, Mexico, D.F.**8:1-54 (July-Sept.) 1947. Partial Index**

- *Isoimmunization of Mother for Factor of "A" Blood Group of Fetus. R. Medina Aguilar.—p. 49.

Isoimmunization of Mother from Fetus of A Blood Group.—The subject of this report, a woman 37 years of age, had had 9 normal children and 3 abortions. Her blood was of group B, Rh positive and MN positive. There was no syphilis in the family. In the course of the thirteenth pregnancy she contracted moderate diabetes and moderate hypochromic anemia. Her blood serum agglutinated blood of the A group, both Rh positive and Rh negative. It did not agglutinate blood of either B or O groups. After inactivation it hemolyzed blood serum of the A blood group. The father's blood was of group A, Rh positive and also MN positive. The children belong to A, AB or O blood groups. All are Rh positive. The patient was brought to the hospital with acute hemorrhage from placenta previa with a dead fetus whose blood was of group A, Rh positive and MN positive. The fetus presented hepatomegaly, splenomegaly and blood containing 84 per cent erythroblasts, the majority of which were of the Lendorff type. The liver and the spleen contained large numbers of erythroblastic nests which greatly damaged the structure of the organs. The findings in the fetus clarified the isoimmunization of the mother of the B blood group by a fetus of the A blood group, notwithstanding the fact that both the mother's and the fetus's blood were Rh positive and also MN positive.

Annales Pædiatrici, Basel**170:113-168 (March) 1948. Partial Index**

- *Banti's Complex of Symptoms and Its Relations to Occult Malaria During Childhood. A. Eckstein.—p. 113.
- Tropical Aspects of Pathology of Liver in Pediatrics. E. Stransky and F. Daus Lawas.—p. 131.
- Synechia Vulvae in Children. K. Vesely.—p. 151.

Banti's Disease and Occult Malaria During Childhood.—Eckstein of Ankara believes that in the presence of disorders that show splenomegaly, degeneration of splenic tissue and its replacement by connective tissue, Banti's syndrome will have to be considered, if malaria, kala-azar, cirrhosis, glycogen disease, Niemann-Pick's disease and the like can be ruled out. Further advancement in diagnostic procedures will probably limit the concept of Banti's disease more and more and replace its diagnosis by one of the aforementioned group. The author cites a case in which repeated examinations of the blood and of the sternal and splenic punctates and observation of the temperature justified the diagnosis of Banti's disease after all other possibilities, particularly malaria and kala-azar, had been ruled out. When the spleen, which weighed $3\frac{1}{2}$ Kg. (7 pounds, 11 ounces), was removed it showed histologically only degeneration with proliferation of the connective tissue, while the characteristic signs of malaria (plasmodia and pigment) were absent. Immediately after the operation the typical picture of tertian malaria (type of temperature curve, tertian ring forms) developed. There existed in this case an occult form of malaria which had presented the picture of "Banti's disease." In spite of the splenectomy there were no complications, and the patient was eventually cured after several relapses. The case corroborates earlier impressions that malaria in patients without a spleen is not necessarily extremely serious or even fatal as some authors have claimed. The author feels that splenectomy is justified in similar cases.

Arch. Hosp. Clin. Niños Roberto del Rio, Santiago**15:151-208 (Dec.) 1947. Partial Index**

- *Leukemias in Infancy. A. Costa.—p. 158.

Leukemia in Infants and Children.—Costa reports observations on 37 leukemic patients, between the ages of 6 months and 10 years. There were 25 boys and 12 girls. Leukemia was of the acute type in 29 patients, of the chronic myeloid type in 5 and monocytic in 1. The youngest patient in the group with acute leukemia was 6 months old. Acute leukemia appears to be frequent in infants and in young children. It represents 80 per cent of the total number of cases of infantile leukemia. In acute leukemia of infants and children there are remissions

during which the leukemic changes of the blood are lacking. This fact makes the myelogram of great diagnostic importance. The duration of the disease is short, especially in infants and young children. The clinical and hematologic picture of chronic myeloid leukemia in infants and children is similar to that of adults. The cases of monocytic leukemia observed by the author were all of the Naegeli type and of short course.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam
92:681-748 (March 6) 1948. Partial Index

*Electrocardiogram and Patent Ductus Botalli. W. den Boer.—p. 698.
Phrenic Shoulder Pain. G. J. Smelt.—p. 706.

Electrocardiogram and Open Ductus Botalli.—According to den Boer 3 children with symptoms of patent ductus arteriosus (Botalli) were seen during the last year at the clinic in Utrecht. Deviation in the electrocardiogram of the axis to the left may occur, but a decided deviation to the right makes it almost certain that the open ductus is complicated by other defects such as pulmonary stenosis, or that a patent ductus arteriosus does not exist. Deviation of the axis to the right is a contraindication to operative treatment. The electrocardiographic examination is of great value in the differentiation of patent ductus arteriosus with and without complications. It will help prevent operations where they are not advisable and will also prevent bringing an otherwise valuable operation into discredit.

Nordisk Medicin, Stockholm

37:299-348 (Feb. 13) 1948. Partial Index

Chemotherapy in Rheumatic Polyarthrititis. N. Svartz.—p. 299.
*Gold Treatment in Chronic Polyarthrititis. F. Sundelin.—p. 303.
*Chronic Polyarthrititis in Children and Gold Treatment. B. S. V. Bille.—p. 307.
Myasthenia. S. Refsum.—p. 311.

Gold Treatment in Chronic Polyarthrititis.—Reactions or complications were seen in 50 per cent of 2,817 courses of treatment in 1,904 cases of polyarthrititis treated with gold in the last five years; only 4.5 per cent of the complications were grave and led to the interruption of the treatment. Seven cases were fatal. On completion of treatment fully 90 per cent of the patients were subjectively and objectively improved both as to local symptoms and general condition. Preliminary report on late results shows that of 300 patients given treatment with colloidal gold completed at least three years ago 273 continue fully or partly able to work. Because of its effectiveness, treatment with colloidal gold occupies a special place among the therapeutic means tried to date in chronic polyarthrititis. The treatment must be given under close control of the patient. The dosage must be comparatively high to insure quick and adequate results. Large doses do not entail greater risk than small doses. The complications are often associated with rapid improvement in the articular symptoms. The grave complications consist of extensive and prolonged dermatitis, granulocytopenia and thrombopenic purpura; also encephalitis and bronchopneumonia. The author does not repeat the treatment in a patient who has had thrombopenic purpura. Arteriosclerotic patients with hypertension and with cardiac injuries and some patients with nephritis occasionally evince low tolerance to treatment with colloidal gold.

Chronic Polyarthrititis in Children and Gold Treatment.—Bille reports on 43 cases of the disease in children under 15 given treatment with colloidal gold; in 46 cases intramuscularly, in 16 intravenously, in 2 by mouth, with one injection a week and usually from six to ten injections in each course, under close control with examination of the blood and urine at least once between injections and daily control of the temperature. In all, sixty-four courses were given. The treatment was individualized, with initial dose usually of 5 to 40 mg. depending on the body weight, highest dose form 20 to 150 mg., the total amount in a course of ten injections from 100 to 1,000 mg. The treatment gave good results in 25 children; 11 were somewhat improved, and 7 unchanged. Complications, almost all mild, appeared in about half the courses of treatment and were independent of the amount of gold given. Encephalitis and purpura are the most dangerous complications in adults. None of the children had encephalitis; 1 case of purpura, with recovery, was the most serious complication in these cases. Albuminuria occurred more often than in adults.

Pediatria del Medico Pratico, Turin

22:271-312 (Oct.) 1947. Partial Index

*Congenital Hemolytic Disease: Prevention and Therapy. E. Lattes, p. 271.

Congenital Hemolytic Disease.—Prevention of the disease includes avoiding transfusion or intramuscular injections of Rh-positive blood into infant girls, girls and women all through their life of sexual activity when the blood of the infant, girl or woman is Rh negative. In case of isoimmunization of the mother, the sudden increase or lowering of blood antibodies after the eighth month of pregnancy is an indication for induction of delivery and replacement of the newborn infant's blood by transfusion immediately after birth. Transfusion of this type is also indicated immediately after birth in cases of acute jaundice in infants born at full term to isoimmunized mothers. Blood in the amount of 500 cc. is administered. Transfusion of Rh-negative blood is indicated in the great majority of cases of anemia from congenital hemolytic disease. The author reports good results with blood transfusion in 5 cases.

22:313-340 (Nov.-Dec.) 1947. Partial Index

*Penicillin Therapy of Purulent Pleurisy and of Pulmonary Abscess in Infants. F. Toscano.—p. 323.

Penicillin Therapy of Purulent Pleurisy and of Pulmonary Abscess.—Combined intrapleural and intramuscular penicillin therapy is of value in purulent pleurisy of infants. Toscano reports favorable results in 7 cases. Pulmonary abscesses require continued introduction of penicillin into the abscess by means of aerosol inhalations. The solution of penicillin to be nebulized in oxygen should contain from 20,000 to 100,000 Oxford units of penicillin for each cubic centimeter of the solution. The patient should inhale from 5 to 8 liters of the oxygen-penicillin nebulization as the total dose.

Presse Médicale, Paris

56:193-204 (March 20) 1948

*Preventive Vaccination Against Whooping Cough and Diphtheria in Infants and Young Children. G. Ramon, R. Debré, M. Lelong, R. Sohler and R. Richou.—p. 193.

*Modified and Latent Forms of Acute Meningitis and Abscess of Cerebrum in Patients Treated with Penicillin. L. Rouquès, M. David and Jean Pautrat.—p. 194.
Syndrome of Pantoast and Tobias. J. Chenebault.—p. 195.

Vaccination Against Whooping Cough and Diphtheria.—Ramon and his associates have resumed their investigations on immunization against diphtheria and whooping cough which were begun before the war. They had demonstrated on guinea pigs that when diphtheria toxoid was mixed with antipertussis vaccine its efficacy was increased from three to ten times. The authors continued their studies on experimental animals and on young infants with an antipertussis vaccine which is non-virulent and nontoxic and to which had been added diphtheria toxoid. The latter was concentrated, purified and freed from foreign elements, so as to avoid reactions to peptones and to other substances derived from the culture. Combining the vaccines not only makes it possible to reduce the quantity to be injected, but increases the chances of success. The authors think that it will be possible to immunize infants before they are 8 months old simultaneously against whooping cough and diphtheria. In the course of the second year of life the child, in accordance with French law, will be subjected to vaccination with a mixture of diphtheria and tetanus toxoids to which should be added avirulent whooping cough vaccine. This last formula will have the advantage of reinforcing the previously induced immunity to diphtheria and whooping cough and confer immunity to tetanus.

Modified Forms of Meningitis and Cerebral Abscess in Patients Treated with Penicillin.—Rouquès and his associates point out that acute meningitis and cerebral abscess of patients treated with penicillin often assume modified aspects and may even remain latent. It is not advisable to wait for the appearance of the classical functional signs before considering the existence of these complications. The authors present 2 cases. One concerned acute febrile meningitis manifested only by intense headache without muscular contracture or changes in the reflexes. The other case was one of a large cerebral abscess with osteomyelitis of the frontal bone; the

condition was so dormant that without the existence of papilledema one would have hesitated to affirm the existence of a pathologic process.

56:301-316 (April 24) 1948

Treatment by Transplantation of Tissues According to Filatov's Procedure. P. Wertheimer, R. Gautier and S. Marek.—p. 301.

"Cure" of So-Called Acute Leukemia. R. Fauvert, J. Mallarmé and P. F. Petit.—p. 302.

*Brucellosis and Rapid Agglutination. J. Basset.—p. 303.

Cure of Acute Leukemia.—According to Fauvert and his co-workers acute leukemia or malignant leukosis is a subacute condition with a prolonged course, spontaneous remissions and occasionally even with a temporarily reversible blood picture. Four cases, in 2 adults and in 2 children, are reported, which presented an initial phase of characteristic and complete leukosis followed by clinical and hematologic remission. The duration of the remission was four years and one year respectively in the adults, and two and one-half months in the children. The treatment of these 4 patients consisted of rest exclusively. These facts must be considered in the evaluation of the efficacy of any therapeutic trial, and results should be acknowledged only after a follow-up of several months. Although satisfactory results had been obtained with penicillin, transfusions or perfusions of citrated blood, they should be considered only as symptomatic treatments. Exsanguination transfusion which was given to children did not prove more effective than simple transfusion or perfusion.

Rapid Agglutination in Brucellosis.—Basset believes that a positive reaction obtained with a rapid antigen may cause an erroneous serum diagnosis of brucellosis when certain unreliable commercial antigens are used. Only antigens should be considered of value which have been standardized and adjusted to the titer of a known serum. The more concentrated or the more rich in microbial bodies an antigen is, the less sensitive it is. For rapid agglutination an antigen of much higher concentration is required than for slow agglutination because of the considerable volume of serum used for rapid agglutination. Procedures are described by which such antigens may be obtained which then may offer considerable aid in the diagnosis of brucellosis at the sick bed.

Revue du Rhumatisme, Paris

15:101-132 (April) 1948. Partial Index

*Reducible Discal Hernias: Contribution to Problem of Sciatica Designated as "Nondiscal." S. de Sèze and J. Leverneux.—p. 101.

Lumbar Arthrodesis L-2 L-3 Effected by Anterior Abdominal Approach in Treatment of Post-traumatic Vertebrodiscal Syndrome. S. de Sèze, P. Funk-Brentano and S. H. Jurmand.—p. 106.

Vertebral Accidents in Shock Therapy: Rapid Aggravation After Series of Electro-shocks of Slight Pre-existent Scoliosis. S. de Sèze and J.-C. Dubois.—p. 115.

Latent Spondylolithesis with Large Spondylolysis of L-5: Roentgenologic Discovery at Time of Acute Volvulus of Stomach. S. de Sèze, J. Durieu and A. Djian.—p. 120.

Reducible Discal Hernias and Sciatica.—Evidence is presented by de Sèze and Leverneux to the effect that certain posterior hernias of the intervertebral disk are reducible. This explains some discrepancies between the clinical aspects and the results of roentgenography. In certain cases, in which clinical signs of discal hernia exist, contrast roentgenography fails to disclose the typical notch. This is not surprising, because the roentgenologic examination is made with the patient in the recumbent posture, usually after rest, and in the posture which gives him the least pain. The discal notch might appear if such a patient were examined, with the aid of morphine, in the position in which the pain is most severe. The reducibility of some discal hernias explains also a certain number of negative surgical explorations in cases of sciatica which are then referred to as "nondiscal" or not due to herniation of a disk. The surgeon must be able to evaluate the consistency of the disk and must think of the possibility of reducible disk lesions and learn to recognize them. The reducible character of the discal hernia does not necessarily imply the benign character of the painful lumbosciatic syndrome. On the contrary, nothing is more annoying than are these "intermittent" hernias. After much loss of time, an operation may be decided on, but if the hernia is not detected and removed, the operation may be ineffective; if it is recognized exeresis may not suffice. These hernias, which are reducible by rest, pose the question of the advisability of a bone graft.

Revue de la Tuberculose, Paris

12:165-308 (No. 3 & 4) 1948

*Report on Treatment of Tuberculosis With Streptomycin. (Study of 225 Patients). E. Bernard and Miss Alice Lotte in collaboration with B. Kreis, J. S. Bourdin and G. Arnaud.—p. 165.

Streptomycin in Tuberculosis.—Bernard and Lotte treated with streptomycin 225 patients, 78 of whom had tuberculosis of the meninges, 54 miliary tuberculosis, 64 nonmiliary tuberculosis of the lungs, and the remainder tuberculosis of the larynx and pharynx. The average dose administered by intramuscular route was 1.5 Gm. (1,500,000 units) for twenty-four hours. Occasionally the daily dose was increased to 2 Gm., but some patients could tolerate only 1 Gm. or even less. At the initiation of the treatment all the patients were given additional three to eight intraspinal injections of 50,000 to 300,000 units, but in general 100,000 units of streptomycin every second day. The treatment by intramuscular route was continued for several months. There were recurrences in 14 of 22 patients in whom treatment was discontinued spontaneously after two to three months. In 5 patients there were recurrences in the course of the treatment after three to five months and in 1 patient even after seven months of treatment. Untoward reactions consisted of vomiting, vertigo and, in 1 case, erythroderma, but in the majority of the cases these reactions did not recur when the treatment was continued after a temporary discontinuance of three to four days. Vestibular disturbances were observed in 39 per cent of the patients. Thirty-one of the 78 patients with tuberculous meningitis were alive after six to eight months. In 22 of the 54 patients with miliary tuberculosis meningitis supervened before, during or after treatment. Thirty-six of the 54 patients, mostly those without meningitis, survived and presented a complete clearing up of their roentgenograms. Streptomycin proved to be a valuable preoperative or postoperative measure in cases of nonulcerating pulmonary tuberculosis. In laryngeal and pharyngeal tuberculosis the dysphagia subsided and the dysphonia and the lesions improved as result of the treatment with streptomycin. Improvement was obtained in isolated nonstenosing forms of bronchial tuberculosis.

Schweizerische medizinische Wochenschrift, Basel

78:317-344 (April 10) 1948. Partial Index

B. C. G. Vaccination: Desirability of Its Introduction in Switzerland. T. Baumann.—p. 317.

Chemotherapy of Tuberculosis. E. Suter.—p. 324.

*Streptomycin in Treatment of Intestinal Tuberculosis. N. Markoff.—p. 329.

*P-Aminosalicylic Acid in Chemotherapy of Tuberculosis. L. Ragaz.—p. 332.

Streptomycin in Intestinal Tuberculosis.—Markoff presents a preliminary report on the supporting effect of streptomycin in the treatment of ulcerative intestinal tuberculosis. Streptomycin is administered parenterally, but also enterally in the form of high enemas with elevation of the pelvis and subsequent placing on the right side. In this way, the streptomycin can be carried to the ileocecal valve and beyond into the distal portions of the small intestine. The region of the ileocecal valve is the most frequent localization of the ulcerous and tumor-like forms of intestinal tuberculosis. The enema is given daily for two weeks. This enteral local treatment of intestinal tuberculosis with streptomycin has proved to be a valuable supportive treatment in the 5 cases in which it was employed. Only six months have elapsed since the authors tried this treatment. Their observations are similar to those in the United States. The intestinal symptoms were greatly improved. Roentgenoscopy suggests a healing of the ulcers, but complete repression of the tuberculous process has not been observed as yet. If the more distal portion of the colon and the rectum are involved, treatment by enema is likewise advisable. If tuberculosis involves the small intestine, particularly the proximal portions, oral therapy with streptomycin could be tried with the same doses as those used for bacillary dysentery.

P-Aminosalicylic Acid in Therapy of Tuberculosis.—Most of the patients treated had a progressive form of tuberculosis and a positive sputum. Internal treatment with divided doses of 10 to 15 Gm. per day, continued for a week and then followed by a week free of treatment, was the method most

commonly employed. This treatment was usually continued for several months. Improvement was observed in from 60 to 70 per cent of the patients with pulmonary tuberculosis. There was improvement in the general condition, increase in weight, decrease in temperature, improvement in the sedimentation rate and decrease in the number of bacilli in the sputum. A patient with renal tuberculosis was free from bacilli after two weeks and free from symptoms after eleven weeks. However, para-aminosalicylic acid did not pass the crucial test; it did not save 4 patients with miliary tuberculosis and 3 with meningitis. Favorable results were obtained in the local treatment of empyemas and abscesses by means of a 10 per cent solution of the drug.

Schweizerische Zeitschrift für Tuberkulose, Basel

5:1-64 (No. 1) 1948. Partial Index

Total Atelectasis of Lung with Bronchiectasis as Sequela of Tuberculosis of Hilus Nodes. H. Wissler.—p. 1.

*Bronchoscopic Study and Behavior of Bronchi in Course of Primary and Secondary Stages of Tuberculous Infection. A. Dufourt and P. Mounier-Kuhn.—p. 49.

5:65-126 (No. 2) 1948. Partial Index

*Bronchoscopic Study and Behavior of Bronchi in Course of Primary and Secondary Stages of Tuberculous Infection. (Concluded). A. Dufourt and P. Mounier-Kuhn.—p. 65.

Successive Cessation of Both Poles of Primary Tuberculous Complex. Nelly M. Schmid.—p. 100.

Bronchoscopic Study of Primary and Secondary Stages of Tuberculosis.—Dufourt and Mounier-Kuhn report 25 cases of primary infection, tuberculous bacillosis and epituberculosis in 22 female patients between the ages of 2½ and 20 years and in 3 boys between the ages of 12 months and 4 years, on 24 of whom bronchoscopy was carried out. This method of examination has been of considerable aid in elucidating the pulmonary manifestations which follow the primary infection. In uncomplicated primary infections the orifice of the lobar bronchus corresponding to the location of the primary focus appeared usually slightly congested, edematous and covered with a mucous secretion rich in polymorphonuclear leukocytes and macrophagocytes. It may contain bacilli. In cases of chronic epituberculosis edema of the main bronchus of the involved lobe may be the dominating feature, and the narrow central opening may be obstructed by a plug of tightly packed macrophagocytes. Compression of the bronchial wall by enlarged lymph nodes, in addition to the swelling of the mucosa and to the plug of the secreted material, may be responsible for bronchial occlusion. Rupture of a lymph node into a bronchus and formation of fistulas were observed more frequently than it has been presumed. Large fistulas are rare, but small fistulas, either single or multiple, occur frequently; they may be latent or manifested by occasional attacks of cough, pain in the chest or rise of temperature. As a rule the roentgenologic picture of the chest reveals only minimum changes limited to the inferior or median lung fields. The bronchial fistulas may heal completely or they may be responsible for various late clinical syndromes resulting from scar, cicatricial stenosis and bronchogenic dissemination.

Semaine des Hôpitaux de Paris

24:891-912 (April 6) 1948

Pathogenic Study on Origin of Dyspnea Associated With Pneumothorax Causing Suffocation. G. Giraud, A. Balmès and J. Mirouze.—p. 891.

Standardization of Vernes' Test for Serum Diagnosis of Syphilis. R. Bricq, A. Gager and J. Lacapère.—p. 894.

*Recent Observations on Recrudescence of Diphtheria in Europe and on Efficacy of Ramon's Anatoxin. H. and M. Hinglais.—p. 899.

Recrudescence of Diphtheria in Europe.—According to the Hinglais, diphtheria has become the most common and the most fatal of the epidemic diseases in Europe after World War II. The average number of cases in the Netherlands during the period of 1933 to 1939 was 1,400, as compared to that of 38,000 during the period of 1941 to 1946. The corresponding numbers in Finland were 1,993 and 54,297, respectively; in the Iberian peninsula 1,119 and 27,474 respectively; in France 19,893 during the decade of 1928 to 1938 as compared to 45,541 in 1945; in Belgium 2,090 and 6,099 respectively; in Switzerland 2,264 and 4,981 respectively. In Hungary, where vaccination with Ramon's antitoxin was practiced on a large scale and organized methodically, a definite decrease in the number of cases was observed (from 14,500 in 1934 to 9,576 in 1946), and the same applies to Sweden and Denmark. In England mass

vaccination has been carried out since 1940-1941. The average number of cases during the period of 1935 to 1939 was 59,114, with 2,860 deaths (mortality rate 5.8 per cent) as compared with 18,596 in 1945 with 694 deaths and to 12,337 in 1946 with 472 deaths. These data and those published by the health service of New York City demonstrate the decisive part which vaccination played in the regression of the disease in England and in New York City. The rhythm of the drop in the mortality rate was the same as that of the drop in the morbidity rate, which proves that the vaccine is as effective with regard to mild forms as to grave forms of the disease. In spite of a certain failure margin which should not be denied, the methodic application of vaccination in a country may practically eliminate the disease in the course of several years.

24:1011-1034 (April 22) 1948

Isolated Round Tuberculous Focus, Nodular, Pseudotumorous or Pseudocystic on Roentgenologic Examination. (Infiltration of Assmann's Type, Tuberculoma and Definitely Isolated Cavity). R. Kourilsky, M. Fourestier, Miss D. Brille and E. de Saint-Germain.—p. 1011.

*Armstrong's Disease (Lymphocytic Choriomeningitis). B. Kreis.—p. 1018.

Prolonged Icterus in Newborn Due to Incompatibility of Rh Factor. Part Played by Maternal Lactation. G. Desbuquois.—p. 1023.

Lymphocytic Choriomeningitis.—Kreis emphasizes that a filtrable virus which was discovered in the United States, may be the pathogene of certain forms of lymphocytic meningitis in which recovery occurs. History of contact with mice, a prodromal febrile period and a pronounced hyperleukocytosis in the cerebrospinal fluid aid in the diagnosis. The latter may be further confirmed by animal inoculation or by demonstration of certain reactions in the serum. The virus causes a lymphocytic infiltration of the choroid plexus when inoculated into the brain of mice. Experiments in man revealed that the disease may be reproduced experimentally by the subcutaneous, intramuscular or intravenous injection of 2 cc. of an emulsion of brain of mice containing the virus; after an incubation period of thirty-six hours to three days rise in temperature may occur at two or three intervals over a period up to three weeks, and the last febrile attack may be associated with late meningitic symptoms such as headache, vomiting and Kernig's sign. In contrast to the tendency of American authors to consider lymphocytic meningitis and choriomeningitis as synonyms, the virus is responsible for only a small number of these cases. The considerable number of persons examined at random who neutralize the virus suggests that Armstrong's disease is to be considered as one of the most important infections occasioned by an identified serum.

Strasbourg Médical

108:83-94 (March 15) 1948. Partial Index

Hemorrhages after Hysterectomy (Fourteen Cases Observed During Two Years). R. Keller and L. Gioanni.—p. 83.

*Calcareous Arteritis and Its Treatment by Parathyroidectomy. A. Jung.—p. 87.

Parathyroidectomy in Calcareous Arteritis.—Jung reports 1 case of chronic hyperparathyroidism in a man aged 53. The patient had generalized arteritis with calcium deposits in the abdominal aorta, in the femoral and posterior tibial arteries, in the internal and external carotid arteries and in the choroid plexus. There was a calcified subacromio-deltoid bursitis and calcium deposits in the epiphysis. There was generalized osteoporosis, paradentosis and multiple dental caries. Abnormally large amounts of calcium were observed in the blood and in the urine. Two parathyroid glands were removed under local anesthesia. The calcemia was reduced from 12.2 mg. per cent to 11 mg. per cent and the calciuria from 40 mg. per cent to 13 mg. per cent. Pain in the back and in the shoulder disappeared and pain in the legs and feet was considerably relieved. Three years after the operation the patient was able to hike in the mountains and had resumed his work as an architect. Previous animal experiments had shown that injections of parathyroid extract in rats produced an increased calcium content of the heart and arteries which can be demonstrated both chemically and histologically. These results suggested the existence of chronic hyperparathyroidism with predominant vascular manifestations. The case reported is to be considered as the first clinical proof.

Book Notices

Pathology of Tumours. By R. A. Willis, D.Sc., M.D., F.R.C.P., Sir William H. Collins Professor of Human and Comparative Pathology, Royal College of Surgeons, London. Cloth. Price, \$20. Pp. 1044, with 500 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3; Butterworth & Co., Ltd., 4-5 Bell Yard, Temple Bar, London, W.C. 2, 1948.

The first part, 207 pages, deals with general pathologic aspects of tumors: definition, classification, "innocence and malignancy," experimental production, statistics, tumors in animals, mode of origin, structure and growth, direct spread, metastasis and hypothetical nature of neoplasia. The rest of the text, pages 208 to 992, covers systematically in 50 chapters the tumors in the different parts of the body. This is perhaps the most important, convenient source now available for thorough and reliable information about the pathologic aspects of individual tumors. There is a valuable list of select references at the end of each chapter, frequently with comments. In the case of main references and reviews, the authors' names are in capitals and the full titles are given. The 500 figures are all of personally studied structures, with emphasis on less familiar and special features. Needless repetition is avoided. There are many instructive reports of the author's own observations in Melbourne and London of more or less familiar aspects of tumors. The book is addressed primarily to pathologists, advanced students and investigators, but clinicians with special interest in cancer will find it of great interest and value. Willis states promptly and clearly his own present opinion in disputed matters in order "to avoid noncommittal vagueness," realizing fully that future advances may modify current views. Fourteen years ago Willis published his book on "The Spread of Tumours in the Human Body," also a notable book, and now is "Pathology of Tumours" is welcomed as an outstanding addition, soundly critical and comprehensive, to the literature on tumors.

Annual Review of Physiology. Volume X. Victor E. Hall, Editor, Jefferson M. Crismon and Arthur C. Glese, Associate Editors. Cloth. Price, \$6. Pp. 552. Annual Reviews, Inc., and American Physiological Society, Stanford, California, 1948.

The tenth "Annual Review of Physiology" is, like the previous volumes, replete with a wealth of information that has laboratory and clinical value. Practically all the reviews have been obtained from this country; only a few from abroad. Nevertheless, the contained information will interest everyone with research and progressive clinical interest. Included in the contents are discussions of physical properties of protoplasm, physiologic aspects of genetics, developmental physiology, physiology of reproduction, conduction and synaptic transmission in the nervous system, somatic functions of the central nervous system, vision, digestive system, blood cytology, heart, peripheral circulation, metabolic aspects of shock, respiration, anoxia in aviation, regulation of energy exchange, metabolic functions of the endocrine glands, heat and cold, physiology of sweating, pharmacology, the coagulation of blood, hemostasis, physiologic psychology and physiologic effects of radiant energy. This volume will need no introduction to those who are familiar with the earlier reviews. Others who have yet to make their acquaintance with it will find a collection of information that warrants the reputation gained by the book.

Aids to Diagnosis and Treatment of Diseases of Children. By F. M. B. Allen, M.D., F.R.C.P., Physician, Belfast Hospital for Sick Children, Belfast. Eighth edition. Fabrikoid. Price \$2. Pp. 268. Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2; Baillière, Tindall and Cox, 7 and 8 Henrietta St., Covent Garden, London, W. C. 2, 1947.

This book attempts to cover briefly the entire scope of pediatrics and to give aids to diagnosis and treatment. However, most of the material is inadequately covered, serious omissions are present and much of the material is obsolete. Intrathecal therapy is recommended for meningococcal meningitis, a procedure that has been discarded. None of the newer developments in the prophylaxis of rheumatic fever or the diagnosis and surgical treatment of congenital cardiac disease are mentioned.

There is little in the book that will be of aid to the student or practitioner.

Die Sauna: ihre Geschichte—die Grundlagen ihrer Wirkung—ihre Anwendung zur Prophylaxe und Therapie mit einem Anhang: Bau und Betrieb der Sauna. Von Dr. Med. Victor H. Ott, Privatdozent an der medizinischen Fakultät Zürich. Cloth. Price, 15 Swiss francs. Pp. 224, with 29 illustrations. Grune & Stratton, Inc., 381 4th Ave., New York 16; Benno Schwabe & Co., Klosterberg 27, Basel, 1948.

The author states that one of the most important tasks of physical medicine is to submit well established physical procedures to an impartial scientific investigation.

The Finnish "sauna bath" became popular in Europe after the Olympics in 1936. At that time the Finnish athletes considered the regular use of "the sauna" to be so essential to their physical fitness that they had a sauna bath built in Berlin.

The sauna bath is a sweat bath heated by a stone oven in a small enclosed room. Basically it is a dry hot air bath, but steam is produced occasionally by sprinkling a small amount of water on the hot stones. Flagellation with birch twigs is done to promote hyperemia of the skin. Cooling is performed by a brief plunge into cold water.

Dr. Ott has compiled his data on the effects of the sauna bath over a period of several years.

A good review of the history of sweat baths through the ages precedes the discussion of the author's own experiences. The report is based on questionnaires sent to 95 healthy persons who used the sauna spontaneously, and on observations of 130 patients at the Polyclinic for Physical Therapy at the University of Zürich with varying complaints, predominantly rheumatic diseases and "neurovegetative" disturbances.

The physiologic effects observed include increases in bodily temperature, pulse rate, blood pressure and respiratory rate, electrocardiographic changes and changes in the chemical and cellular composition of the blood. The author also reports therapeutic effects by means of representative cases, but obviously a much larger clinical study would be required to prove the reported clinical results.

A comprehensive discussion of experimental physical conditions such as temperature and humidity of the air at various locations in the sauna room, heat radiation and cooling after the bath is included.

An appendix gives detailed specifications for the building and maintenance of a sauna bath.

The author has presented a thorough review of the subject and his experimental observations seem sound; however, his conclusions concerning clinical results, which include indications and contraindications for the use of the sauna bath, appear to be premature on the basis of his small series of cases. There seems to be little likelihood that this ancient and rather crude procedure will be employed extensively in American medicine, but physicians interested in modern forms of thermotherapy may find this presentation interesting.

Fundamentals of Human Reproduction. By Edith L. Potter, M.D., Associate Professor of Pathology, Department of Obstetrics and Gynecology, School of Medicine, University of Chicago, Chicago. Cloth. Price, \$3.50. Pp. 231, with 92 illustrations by Alvin W. Meyer, F. A. A. B. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 18, 1948.

This is an excellent reference or supplemental book for nurses on the subject of human reproduction. If used as a textbook it would require a skilled teacher, since there are none of the usual textbook appurtenances such as review questions, projects or other teaching helps. After the introduction, Part I proceeds in well planned sequence from a consideration of forms of animal life to the general pattern of reproduction, the factors responsible for body form and the number of offspring. Part II deals with the sex organs and their function, the development of the blastocyst and the formation of the placenta and a survey of embryonic and fetal development. In Part III, separate chapters are devoted to development of each of the following parts: brain and spinal cord, stomach and intestines, liver, pancreas, lungs, spleen, heart and blood vessels, kidneys and urinary bladder, organs of reproduction, glands of internal secretion, body framework, skin and accessory structures, and the face and sense organs. Part IV is devoted to birth and the future life of the infant.

There are excellent diagrammatic illustrations throughout the text. A notable feature is the series of photographs—twelve plates in number—which begins with the chorionic vesicle and

shows the embryo and fetus at various stages of development up to twenty-two weeks, including a roentgenogram of bony development at sixteen weeks. There are a good bibliography, a helpful list of visual aids and an adequate index. The book is well printed and attractively made. It can be recommended with enthusiasm for the use for which it was intended in nursing education or any other introductory course in embryology.

Introduction à l'étude de l'anesthésie: Chimie—biochimie—physiologie—physiopathologie—pharmacodynamie—thérapeutique—technique. Par J. Dautrebande, professeur à l'Université de Liège, E. Philippot, chef des travaux de thérapeutique expérimentale, et M. J. Dallemagne, assistant de chirurgie expérimentale. Préfets des cours de l'Ecole d'anesthésie de Liège. Paper. Price, 750 Belgian francs. Pp. 1235, with 288 illustrations. Masson & Co, 120 Boulevard St. Germain, Paris; J. Duculot, Gembloux, Belgium, 1941.

As the title implies, the book is an introduction to the study of anesthesia in all its aspects compiled with true continental thoroughness. It is dedicated, and is a worthy memorial, to Frank McMeekan that good friend of the senior author (Dautrebande) and of all anesthetists. During the past quarter century the publications of the senior author, a distinguished Belgian physiologist, have been useful to American anesthetists. The book is divided into three parts. The first (410 pages) deals with the fundamental concepts of physiology, biochemistry and pharmacology which influence, and are influenced by, depressant drugs and the anesthetic state. The second part (150 pages) is concerned with the chemical, physical and other properties of anesthetic agents which influence the absorption and elimination of them by the body. The third part (379 pages) deals with the clinical applications of parts I and II. It includes details of all the various techniques of administration, effects of various concentrations of the individual drugs, methods of determining concentrations and a general exposition of clinical anesthesia. Inhalational therapy, endotracheal techniques and other subjects allied to anesthesia are dealt with quite adequately. Part III is, in itself, a textbook on clinical anesthesia. As such, however, it is slightly handicapped by an obviously limited clinical knowledge and experience of the authors. A very complete bibliography (244 pages) of the English and French literature and an index follow the text. The excellent table of contents appears at the end of the volume instead of at the beginning. This monumental work deserves translation into English. Meantime it will prove extremely valuable to those anesthetists and students who read French. The Belgian editor, J. Duculot, and the Paris printers are to be congratulated on the arrangement, printing and binding accomplished under wartime conditions. A paper-bound book of 1,235 pages which opens flat in the reader's hands and stands hard usage without falling apart is a triumph of the publisher's art.

Mental Health in Modern Society. By Thomas A. C. Rennie, M.D., Associate Professor of Psychiatry, Cornell University Medical College, New York, and Luther E. Woodward, Ph.D., Field Consultant, Division of Rehabilitation, National Committee for Mental Hygiene, New York. Cloth. Price, \$4. Pp. 224. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Square, London, E. C. 4, 1948.

This is a comprehensive and well written review of the social implications of modern dynamic psychiatry. The book deals particularly with developments in the field during and since the last World War. Included in its scope are factual and pertinent discussions of military psychiatry, the civilian readjustments required of the returned veteran, the role of the general practitioner in solving the problems of post-war rehabilitation and the contributions that can be made by social workers, psychologists, the clergy and by leaders in education and industry. Perhaps the only criticisms that can be made of this volume pertain to its implicit assumptions that much of the material it presents is of recent discovery, whereas in truth nearly all of the lessons we painfully "learned" during the last war were well known by 1920, were published in psychiatric journals and government reports, and were then tragically forgotten. Rennie and Woodward now remind us of the incalculable and protracted cost of war in human suffering and social turmoil, and we join with the authors in their fervent hope that this will be the last reminder we shall ever need. The book is highly recommended to physicians, social workers, clinical psychologists and all others interested in the field of social psychiatry.

Heart: A Physiologic and Clinical Study of Cardio-Vascular Diseases. By Aldo A. Luisada, M.D., Instructor in Physiology and Pharmacology, Tufts College Medical School, Boston. With a foreword by Herrman J. Blumgart, Physician-in-Chief, Beth Israel Hospital, Boston. Cloth. Price, \$10. Pp. 653, with 353 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, Maryland, 1948.

This text is written for the practitioner who desires to increase his knowledge of cardiovascular disease. It will be a valuable reference book also for medical students or post-graduate students reviewing this field. The field is covered competently; the book is well illustrated and has a very complete bibliography at the end of each chapter which includes not only the literature in English but also European references.

After a tabular history of cardiology and two chapters dealing with the development and function of the cardiovascular system, the author devotes two chapters to the clinical and technical (laboratory) study of the patient. The author has abandoned the usual etiologic presentation of the heart diseases and substituted an anatomical-clinical classification which he attempts to correlate with etiology. To the reviewer this seems only to lengthen the volume without achieving any clarification of diagnosis. The author complains in his preface that the etiologic classification of heart disease has resulted in mental laziness in formulating an exact diagnosis. Nowhere in his book does he stress that an adequate diagnosis of cardiovascular disease should include a statement of the etiologic factor, the anatomic lesion and the physiologic disturbance, as well as a functional and therapeutic classification. The latter two are becoming more important, especially in connection with patients who are recommended for rehabilitation and employment.

In general one can concur with the majority of his statements regarding diagnosis and therapy. A few topics on which some discussion would be expected are either omitted or only briefly mentioned. These are: the use of anticoagulants in coronary thrombosis with myocardial infarction; the low sodium diet in hypertension, and the use of penicillin in cardiovascular syphilis.

Bergey's Manual of Determinative Bacteriology. By Robert S. Breed, E. G. D. Murray and A. Parker Hitchens. Assisted by Sixty Contributors. Sixth edition. Cloth. Price, \$15. Pp. 1529. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1948.

The new sixth edition of this standard reference, revised under the editorial chairmanship of Robert S. Breed, contains contributions from sixty well known specialists in the field of bacteriology. Changes in the presentation and relationships of almost every genus of bacteria have been made by specialists in consultation with the editorial board. Nearly three hundred new species are described. Because of increased knowledge the number of species described under fission fungi has increased from 1,335 in the fifth edition to 1,630 in the present manual.

The authors state that the present edition does not cover all the descriptions of species found in the literature for, as in all other branches of biology, many of the descriptions are so inadequate that the species described cannot now be identified. Additionally, many of the descriptions are obvious duplications of previous descriptions, while other so-called differences are based on nothing more substantial than the investigator's opinion. A completely new feature, the "Source and Habitat Index," has been added to this volume; the editors believe that it will be extremely useful both to teachers and investigators in determining the identity of a described species or whether a given species is new. Organisms cannot be classified before detailed study of their morphologic, cultural, physiologic and pathogenic characters is made, and the student is warned not to take too literally the descriptions which are drawn to represent average findings. Especially among bacteria, characters such as sugar fermentations, gelatin liquefaction, presence or absence of flagella or other identifying characters may vary.

New information for this volume has been taken from dark field motion pictures of motile cells and photographs taken with the recently developed electron microscope, revealing heretofore unsuspected facts regarding structural features. The book contains a wealth of references to both the domestic and foreign literature for the use of the student and investigator. The total number of pages of the book has been increased from 1,031 to 1,529. Additionally, each page contains approximately 20 per cent more material than the pages of the fifth edition. The structure of the contents of the book remains essentially the same.

Treatment by Diet. By Clifford J. Barborika, B.S., M.S., M.D., Assistant Professor of Medicine, Northwestern University Medical School, Chicago. Fifth edition. Fabrikoid. Price, \$10. Pp. 784, with 14 illustrations. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1948.

Much of the recent voluminous literature on nutrition has been revised and significant additions have been incorporated in the fifth edition. Tables summarizing the effects of vitamins on the body, sources of supply and recommended daily allowances give much information in a concise form. Other tables give analysis of foods that serve to meet basic requirements, symptoms of deficiency states, conditions that influence vitamin requirements and utilization and other significant data. In general, tables are well constructed, clear and contain sound current information. A number of excellent colored photographs add considerably to the value of the book. Seven photographs show comparative servings of foods in such a clear manner that they should be helpful to the physician in diet prescription. Effects of deficiency diseases are shown in three colored photographs and experimental studies in humans on a deficient vitamin C diet clearly show alterations in the healing pattern of wounds.

All the more common disease entities that have nutritional problems are briefly discussed. A number of suggested diets and supplementary instruction for patients form a valuable part of the book. The chapter on cutaneous disease and diet summarizes recent knowledge in the field. A large appendix containing many useful tables, weights and measures and recipes adds to the usefulness of the book. The extensive bibliography is helpful in finding original articles. A good table of contents and index make it easy to find subject matter, although it is disappointing that there is no index of the beautiful colored photographs. On the whole the book is well written, suitably illustrated and can be recommended to physicians interested in the dietary treatment of disease.

Pathological Histology. By Robertson F. Ogilvie, M.D., F.R.C.P., F.R.S.E., Lecturer in Pathology and Assistant in Forensic Medicine, University of Edinburgh, Edinburgh. Foreword by A. Murray Drennan, M.D., F.R.C.P., F.R.S.E., Professor of Pathology, University of Edinburgh. Third edition. Cloth. Price, \$10. Pp. 459, with 266 illustrations. Williams & Wilkins Co., Mt. Royal & Gullford Aves., Baltimore 2, Maryland, 1947.

In the recently published third edition of this book, much of the text is said to have been revised and expanded and fifteen new subjects and their illustrative plates added. The quality of the book, however, remains unchanged. Most of the illustrations are excellent examples of the pathologic processes which they illustrate. The color photography excels the photomicrographs in most medical textbooks made in this country, although oversteaining with eosin detracts from the beauty of many of the preparations. If this book were to be used as an atlas of pathologic histology and not as a textbook of pathology, it could be useful to American students in medical schools where classes are large, instructors are few and material limited in quantity or quality. Although this book is not intended to replace standard textbooks, its conciseness and attractiveness seem to offer the time-harried student a way out of his perennial dilemma. Unfortunately, however, textual material is inadequate for this purpose, and, aside from the gross and microscopic descriptions, the text is so limited in scope that it might be better to omit it and make the book entirely a laboratory atlas. This would increase its real usefulness to students and at the same time would decrease both the bulk and the cost of the book.

La chirurgie biliaire sous contrôle manométrique et radiologique per-opératoire. Par Pierre Mallet-Guy, professeur à la Faculté de médecine de Lyon, Lyon. René Jeanjean, Assistant à la Faculté, et Pierre Marion, Chef de Clinique à la Faculté. Paper. Price, 1200 francs. Pp. 138, with 170 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1947.

This well documented discussion of cholangiography—the materials needed, the technic, the indications and the interpretations of manometric and radiologic procedures to be carried on concurrently with the surgical treatment of the biliary tract deserves careful study. The procedure is not new, having been given its great first impetus by Mirizzi, of Cordoba, Argentina, who in 1939 published a monograph on the subject. The text is based on 550 operative cases. The authors' technic has been somewhat simplified by the use of a portable, com-

pletely enclosed x-ray machine on wheels, sufficiently small to be wheeled under the operating table. The operating table itself is of unique pattern, supported at the two ends instead of by a central pedestal, thus permitting the placement of the x-ray apparatus under the operating table. A device is provided which permits quick simultaneous centering of the x-ray tube and the film holder in the midst of the operation. The authors consider carefully the problems of anesthesia incident to surgery in the presence of x-ray equipment. Numerous beautifully reproduced illustrations are accompanied by explanatory line drawings which make them perfectly clear to the reader. This book is worth while.

You Can Be Thin! Slenderness Through Psychology. By Herman Friedel, M.D. Foreword by Milton Jacovs, M.D. Fabrikoid. Price, \$2. Pp. 117. Caxton House, Inc., 9 Rockefeller Plaza, New York 20, 1948.

Another booklet about weight control with the usual diet lists, tables of caloric content of the common foods and, as an innovation in the popular literature of this field, with emphasis on the importance of psychological factors—such as inner conflicts and frustration—in the development of obesity. This will hardly suffice to increase the number of persons who can reduce their weight to or below normal through their own efforts, as promised in the title of this booklet. But it may be useful education for the obese subject if it helps him to understand why his physician tries to explore his personal problems as part of his examination and treatment.

Motivation in Health Education: The 1947 Health Education Conference of the New York Academy of Medicine. Cloth. Price \$1. Pp. 53. Columbia University Press, 2960 Broadway, New York 27, 1948.

Four qualified contributors present a well rounded clinical analysis of the basic problems of health education and how these may eventually be resolved. Every health educator will encounter in each of the contributions numerous examples of problems with which he or she has wrestled, often despairingly. These matter of fact introspections are both refreshing and encouraging. They demonstrate that health education is not the intangible, formless problem that many are apt to consider it but a living, pulsing subject closely interwoven with all human activities. Physicians as well as lay workers in health education will obtain helpful orientation through consultation of this volume.

Confrontations radio-anatomo-cliniques. II. Publiées sous la direction de M. Chiray, R. A. Gutmann, et J. Sénéque. Paper. Price, 465 francs. Pp. 69, with illustrations. Gaston Dolin & Cie, 8 place de l'Odéon, Paris 6^e. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1947.

A previous review in these pages concerned volume I of this series of 42 case reports. The reviewer is favorably impressed with the choice of the cases and the complete analysis of the roentgenologic, anatomic and clinical aspects. Differential diagnosis is thoroughly considered. Many of the cases are gastroenterologic, but a number of documents relate to osseous pathology. The photographs of the anatomic specimens add to the value of the presentations. This series of "dry clinics" is presented on a high plane of scientific excellence.

Healing Herbs of the Upper Rio Grande. By L. S. M. Curtin. Boards. Price, \$7.50. Pp. 281, with 80 drawings by P. G. Napolitano. Laboratory of Anthropology, Santa Fe, N. M.; San Vicente Foundation, Inc., 984 Acequia Madre, Santa Fe, N. M., 1947.

This book contains a series of brief discussions on articles ranging from Mexican oil (aceite mexicano) to love-vine (yerba mala) arranged alphabetically according to the Spanish name. If the book is not accepted as a therapeutic guide it offers some rather unusual bits of information presented in a somewhat popular style. This is essentially a collection of statements on primitive herbal medicine.

Some Fundamental Principles of Metabolism. By L. H. Newburgh, M. W. Johnston, and J. D. Newburgh. Third edition. Paper. Price, \$2. Pp. 70, with 20 illustrations. J. W. Edwards, Ann Arbor, Michigan, 1948.

This monograph offers to physicians some basic knowledge of the manner in which the body uses food and water. The physics and chemistry concerned are beyond the depth of most practicing physicians; yet a basic knowledge is essential, particularly in controlling such conditions as obesity, undernutrition, edema and fever.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

METHYL ALCOHOL INTOXICATION

To the Editor:—Recently I was asked to testify on the effect of methyl alcohol on a man. Please furnish the additional needed information. The patient was an apparently healthy man about 45 to 50 years old. He had had several teeth extracted shortly before being arrested for drunkenness and had taken acetylsalicylic acid ("aspirin") tablets for pain. He had taken whisky during the previous evening and the morning of his arrest. About noon that day he drove his car about 60 miles. His car contained "zerone" antifreeze. "Zerone" contains 90 per cent methanol (methyl alcohol). The odor of the antifreeze was strong in the car, especially when all the windows were closed and the heater (hot water type) was turned on. When he was arrested, at about 3 p. m., the arresting officers stated that he was so drunk that he could not stand up, his speech was slurred and he had to be assisted to the jail. About one hour later he was released from jail, and at that time was able to write his name when he posted his bond. He recognized the difference between a one dollar bill and a five, and could walk straight without assistance. Have cases of intoxication occurred from inhaling methyl alcohol antifreeze? Would the fact that he had taken some whisky make the effect of the fumes greater? Would the effects of the whisky, antifreeze, and acetylsalicylic acid have caused him to be more stuporous than whisky alone? Does the presence of whisky (ethyl alcohol) in the body slow down combustion of methyl alcohol? V. Fallenberg (Soliman, *Manual of Pharmacology*, 1936, p. 682) stated "... if methyl is mixed with ethyl alcohol, as in liquors, the combustion is incomplete, and harm results from relatively small doses." Would a man as drunk as the arresting officers said that he was have been able to recover from whisky intoxication as quickly as he apparently did?

Joseph W. Chinn, M.D., Tappahannock, Va.

ANSWER:—The extraction of the teeth may have interfered with his driving, particularly since he may have been given procaine hydrochloride with epinephrine. The acetylsalicylic acid would not have effect on his condition unless it had been taken with codeine, and even then the chances are that the effect would have been negligible. The alcohol which he imbibed the night before was probably eliminated before noon the next day. However, the alcohol that he took the next morning would most likely have been present in his blood at noon and possibly for several hours thereafter.

The inhaling of alcohol fumes definitely increases the amount of alcohol in the blood. An instance is known of considerable discomfort and disorientation caused by sitting in a car filled with alcohol fumes. A specimen of urine taken about an hour afterward revealed 0.025 per cent alcohol, which is about the amount that one would have had from an ordinary "shot." Intoxication from the inhaling of methyl alcohol is a definite possibility.

It is likely that the subject was under the influence of ethyl alcohol before he inhaled the methyl alcohol fumes. It is fairly well established that methyl alcohol is less poisonous than ethyl alcohol if the methyl alcohol can be prevented from being oxidized to formic acid. Røe explained that ethyl alcohol in the stomach prevents absorption of ingested methyl alcohol. Also, formic acid ordinarily produced by the oxidation of methyl alcohol will not be formed when ethyl alcohol displaces methyl alcohol in the respiratory organs. In the medicolegal case under discussion, it seems that the subject had consumed the antidote before he was exposed to methyl alcohol. There is, therefore, little likelihood that the methyl alcohol inhaled was an important factor in his state of intoxication. The acetylsalicylic acid would have had no effect on his condition unless toxic doses had been taken, and evidence is lacking that such was the case. The apparent quick recovery is not typical of methyl alcohol poisoning, but commonly occurs when a person is sufficiently stimulated by his surroundings to become temporarily sober.

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TINEA CAPITIS

To the Editor:—Two small boys, ages 7 and 9, have tinea capitis. They have been under the care of a dermatologist for four months. The Wood light shows that the infection is still active. The mothers are intelligent and cooperative, the hair is kept closely clipped and thoroughly scrubbed every night and the salve applied as directed by the dermatologist. What further treatment can be given to hasten cure of their infection?

Eva Cutright, M.D., Wooster, Ohio.

ANSWER:—Tinea of the scalp may be treated by either roentgenologic epilation, manual removal of infected hairs, topical applications or combinations of the three methods. None of these provides a rapid cure, and the choice of method employed depends in large part on the circumstances in each case. It is desirable first to identify the organism from culture, for tinea capitis due to *Microsporum lanosum* usually responds readily to treatment by manual removal of infected hairs and topical applications, whereas that due to *Microsporum audouinii* is rather resistant to such therapy. Topical therapy alone is usually adequate when there is pustular involvement of the scalp.

If in the aforementioned instances there are no other children at home who might become infected and if the youngsters can be trusted to protect their playmates and schoolmates by wearing caps constantly and not exchanging them, it would be well to continue with conservative treatment, which is the application once or twice daily of an ointment of 5 per cent salicylanilide in "carbowax 1500" over the entire scalp followed every few days by a thorough washing of the scalp with tincture of green soap. After the shampoo, when the scalp is free of ointment, it should be examined under the Wood light and all infected hairs removed with a tweezer. These hairs can be detected easily, for they assume a bright green color under the Wood light. If there is not sufficient improvement after a few weeks with this treatment, epilation may then be accomplished by means of roentgen therapy. The technic is exact and must be executed with skill and caution. In one sitting an epilating dose of roentgen rays is administered to the entire scalp with the five point method of Kienbock-Adamson. In three weeks the hairs and with them the fungi begin to fall and, with the use of strips of adhesive tape, those hairs which still adhere are removed. The scalp then should be examined under the Wood light to detect the presence of any scattered infected hair stubs, which should be extracted so that the scalp is entirely bald. An antiseptic ointment, such as salicylanilide, ammoniated mercury or sulfur, should be applied daily during this period until there is a regrowth of hairs. New hairs begin to grow in again after one to three months. The new hair is usually vigorous. On rare occasions the new hairs may differ in quality from the old—they may be straighter or more curly, finer or coarser in texture, and they may even change a little in color. The new hairs should be examined with the Wood light at intervals for several months.

In experienced hands, the treatment of tinea of the scalp by roentgen epilation has proved safe and reliable in thousands of instances. But it must be emphasized again that the treatment is an exact one to be administered with caution. It should be used only by one skilled in the use of roentgen rays for epilation of the scalp if permanent ill effects are to be avoided.

COLD ALLERGY

To the Editor:—Several of my patients suffer from respiratory allergic attacks precipitated by contact with cold air. Is it possible to desensitize these people to cold?

M.D., Connecticut.

ANSWER:—While attacks of asthma are frequently precipitated or aggravated by exposure to cold, patients in whom this is the primary immunologic cause of such attacks are unusual. Such patients usually have other manifestations in addition to nasal and bronchial symptoms on exposure to cold. Urticaria and angioneurotic edema are not only the most frequent associated manifestations but generally the main or only manifestations of cold allergy. In addition, various degrees of prostration associated with a sudden fall in blood pressure may occur when the exposure is sudden and the surface area chilled is extensive.

The cases mentioned by the inquirer are probably not primary cold allergy. Patients who are sensitive to inhalants and have symptoms of either nasal allergy alone or bronchial and nasal allergy are not uncommonly intolerant of cold. This is generally due to the irritating effect of cold air on a labile and irritated mucous membrane which responds rapidly to all types of nonspecific irritants (smoke, odors, inorganic dust) with increased edema and therefore increased nasal or bronchial obstruction. Treatment of asthma precipitated by cold depends

on the determination of whether the symptoms of asthma are due to primary cold allergy or to the more common effects of nonspecific irritation (Urbach, E., and Gottlieb, P. M.: *Allergy*, New York, Greene and Statton, 1946, pp. 411-415; Cooke, R. A.: *Allergy in Theory and Practice*: Philadelphia, W. B. Saunders Company, 1947, pp. 482-485).

Primary cold allergy is extremely difficult to treat. The simplest treatment, suggested by Horton and Roth of the Mayo Clinic, is the immersion of the hands or arms in cool water for one or two minutes twice daily. The temperature of the water is gradually lowered from 65 degrees F. until the patient is able to tolerate water at a temperature of 45 degrees F. Ice rubs or cool showers have been suggested by some allergists. Other methods depend on increasing the patient's tolerance of histamine by daily injections of small doses of the drug, gradually increasing the interval of injections to once a week. Antihistaminic drugs have recently been suggested in doses of 50 to 100 mg. every four hours as needed. These and numerous other measures reviewed in the textbooks mentioned are rather lame suggestions for therapy of a most difficult condition. The results are seldom good in cases of asthma due to primary cold allergy.

As for the more commonly encountered condition of intolerance to cold on a nonspecific basis in patients sensitive to inhalants or occasionally to foods, the treatment depends primarily on the cause of the respiratory allergy. Inhalants to which the patient is clinically sensitive should be removed from the patient's environment if possible. If this cannot be accomplished satisfactorily (as in sensitivity to pollen, mold and house dust), treatment by increasing the tolerance through injections of the antigens is necessary. Foods to which the patient is sensitive should be eliminated from the diet. The more successful treatment of the primary allergy the less will nonspecific irritants affect the respiratory mucosa. Meanwhile the patient should be protected by adequate clothing during cold weather. Commonly such patients protect the mouth and nose by the use of a scarf to avoid breathing cold air.

NUTRITION IN ILLNESS

To the Editor:—I am involved in a discussion on the type of nutrition most appropriate during acute illness, particularly febrile illness. Both sides agree that protein is necessary but disagree on type. One side maintains that as much meat and eggs should be given as the patient can tolerate without inconvenience, as those proteins are most complete for rebuilding of tissues, and that vitamins should be given in abundance. The other side maintains that protein should be given only as milk and vegetables to prevent overstimulation of metabolism by excess protein and also to avoid the toxic effects of nuclear proteins and nucleic acids. It also asserts that vitamins should be given sparingly to prevent invading micro-organisms from receiving the benefit of growth stimulation. What are the exact reasons for restriction of meat in certain diseases, such as nephritis? M.D., Canada.

ANSWER:—The acute period of a febrile illness such as pneumonia is usually of such short duration that the nutrition problem is chiefly one of nutrient fluids which may be taken with a minimum of effort on the part of the patient and with emphasis on the liquid rather than on the protein. Milk and orange or other fruit juices have been judged most suitable at this stage. As soon as the acute stage of fever is past, generous amounts of protein should be fed to check its rapid loss and to prevent hypoproteinemia. A variety of tender meats, eggs and milk supplemented by cereal and vegetable proteins should be used. At least 1 Gm. of protein per kilogram of body weight should be given, this being increased up to 1.5 or 2 Gm. per kilogram if serum proteins are already low, until normal serum protein levels are reached. The added growth requirements of children may bring the levels needed for them up to 4 or 5 Gm. per kilogram of body weight as shown by Harrell for children with Rocky Mountain spotted fever. The relation of protein to antibody formation reported by Cannon suggests a further reason for maintaining adequate protein levels as a protection against infection.

Vitamins should not be restricted in infections. Any condition such as fever which increases metabolism increases the requirement for thiamine. In tuberculosis generous intake of ascorbic acid is necessary to maintain normal plasma levels and appears to reduce the extension of infection to the digestive tract. The incidence of deficiencies of nicotinic acid and riboflavin in patients was also found higher than average. The observation that vitamin A tends to disappear from the blood during fever and the favorable results with the use of vitamin A in animals with tuberculosis indicate that it should not be restricted in infection.

The exact reasons for restriction of meat in nephritis are not obvious. Possibly the more severe effects of large quantities

of meat protein on rat kidneys compared with the simple hypertrophy found with equal levels of casein have influenced some. In other cases, no doubt, such restriction is used as a simple way of reducing protein intake. Meat also is acid forming, and the use of basic diets in nephritis has received some favorable reports. Protein consumption should not be reduced below the minimum metabolism. This with adequate intake of energy may approximate 0.5 Gm. per kilogram of normal weight. Lower intakes would not spare the kidney and would deplete body protein. In the nephrotic syndrome the protein intake should equal the minimum metabolism plus the albumin excreted plus enough to build the depleted serum protein up to normal.

ARTERIOSCLEROSIS AND DIABETES

To the Editor:—A physician 88 years of age, a recognized early authority in roentgenology, has been diabetic for years and is now suffering from the vascular changes that may take place in the advanced years: arteriosclerosis, hypertension, vascular spasm—but no visible retinal hemorrhages. He has macular degeneration of the left eye and has had an embolus that first involved the central retinal artery of the right eye and blocked lower retinal arteries, thus resulting in a blind upper field but with preservation of reading vision in this eye. Other vascular involvements of the lower extremities have occurred but his brain has remained clear. He has circulatory impairment which involves the right lower extremity when suddenly assuming sitting or erect position. While lying down he is able to move the lower extremity at will, but when erect the right leg is somewhat paretic, at times causing him to fall. Most of the time while erect he favors it by support and by chair to chair progress. He has become interested in the possibilities of ether as a therapeutic agent in the terminal stages of arteriosclerosis. I have been able to obtain only short, incomplete references to the use of ether. What are the references stating amount or frequency of dosage and possibility of its use intramuscularly?

Alfred Dean, M.D., Grand Rapids, Mich.

ANSWER:—The condition described by the correspondent is naturally an irreversible process of advanced cardiovascular disease which fortunately has left the mental capacities intact. There are obviously multiple arterial occlusions in various segments of the vascular tree. The lesion in the right lower extremity sounds like a neurologic one. If the reflexes are hyperactive, an upper motor neuron lesion is apt to be present, possibly on a cerebrovascular basis; vascular lesions of the cord are known to occur. Finally, the patient may have a diabetic neuropathic condition in the peripheral nerves producing an areflexia at the knee or ankle. Certainly a neurologic examination is in order, for the paresis may be even independent of the generalized vascular sclerosis.

The advocate of intravenous ether therapy for diabetic gangrene, Dr. R. A. Katz, has abandoned the intramuscular use of ether because of the tissue reaction caused by the injection of ether into muscle. He later advocated the intravenous use of a 2.5 per cent solution of ether, 2 liters daily for twelve days, followed by a rest of two days after which twelve more daily treatments are given.

In a situation as described by the inquiry, the urge for active therapy should be tempered by the recognition of harm which may result from such treatment in a patient aged 88 years with a nerve lesion which is only indirectly vascular, perhaps purely diabetic.

CHILDREN'S SHOES

To the Editor:—"Experts" in children's shoe departments have expressed widely divergent opinions on the type of shoe that should be worn by my children. Parents ask advice on the subject, and I have been unable to find a satisfactory answer. Assuming abnormality is absent and the proper size is worn, does it make any difference whether a child wears sandals, slippers, shoes with ankle support, soft or hard sole shoes, shoes with or without arch support, or shoes with or without an elevated heel? From the orthopedist's point of view, is there any contraindication for the normal child to go barefooted most of the time?

M.D., Florida.

ANSWER:—The fourth line of the query contains an important assumption that might be debatable.

A child walks on the same surfaces as its mother and father; viz., hard floors, cement sidewalks and asphalt streets. It should have, therefore, the same degree of support and protection.

In the case of normal feet and a proper fit of shoes, it makes little difference whether the child wears sandals, slippers, shoes without ankle support, hard soles, shoes without arch supports or shoes without "elevated" heels (inquirer means "tilted" rather than "elevated" heels), providing occasional observation does not reveal ankle valgus or pronation.

Regarding the question of "going barefooted most of the time," the answer depends on the ground. The only places a child should go barefooted are in warm sand on a beach and in the bath tub.

SUBJECTIVE HEAT SENSATION

To the Editor:—A 35 year old Mexican male patient is robust, stout, apparently healthy and weighs 190 pounds (86.2 Kg.). He was in the Army for about four years, and served in Italy. On his discharge in 1945 all tests and examinations were negative in result. Two months ago he began experiencing a sensation of heat, or hot flash, which starts on the medial surface of the right foot about the plantar area and extends to the ankle. At times, it seems to involve the lateral surface of the right thigh. After the hot flash is over he says that it seems that the area involved contracts. This same sensation involves the nuchal area and the right side of the face, causing a similar feeling of contraction. Yet when he touches the areas involved they do not feel hot. His symptoms actually began in 1937, when for three days he had a hot sensation posteriorly beneath the lower rib margin. This feeling then extended to the neck, head and face with a tremor of the right lower eyelid. This was soon followed by generalized headache with nausea. On the third day of the attack, about 10 a. m. he lost consciousness, his head turned to the right, his face became cyanotic, and he salivated profusely. In about five minutes he "came to" and was taken to the emergency hospital, where he was released after a short period of rest. Diagnosis was not made and treatment was not given. He has consulted many physicians but has been unable to obtain relief from the feeling of heat in his foot, neck and right side of face. He has been told by various doctors that there is nothing the matter with him. The symptoms are aggravated when he gets angry or excited. Physical examination was essentially negative in result. The blood pressure was 130 systolic and 84 diastolic. Deep reflexes were hyperactive. Serologic reactions for syphilis are negative. He is nervous most of the time, stating that he is worried about having an attack, as in 1937. What suggestions do you have regarding diagnosis and treatment? He had the symptoms while in the Army but was told that he was shamming. M.D., Texas.

ANSWER.—In the absence of all objective evidence of involvement of the nervous system, the subjective complaints must be analyzed to decide whether it is likely that they reflect the presence of a disturbance in that system. One may encounter in nervous disorders, disturbances of long duration which, even though they disturb structure, may give no objective evidence that they exist. The subjective complaints must be analyzed with the following points in view: 1. Do they have a consistent anatomic distribution? 2. Do they have a consistent behavior, compatible with a disturbance of nerve function? In regard to the distribution, it is seen that the symptoms are always found on the right side of the body, involving the right foot and ankle, thigh, and the nuchal area and the right side of the face. This would correspond, if the condition is neurologic, to a disorder in the left hemisphere. However, there is no consistency as to the areas involved; it may be the foot or the thigh, or the neck or the face. It is also pointed out that there is no progression of the symptoms over the body which would indicate "a cortical spread." If the subjective complaints were to start in the foot, they should then travel to the leg, the thigh, the trunk, then the arm and the face, and, if he is a right-handed man, some disturbance of language should be present.

The character of the symptom, which is a feeling of heat, could be of neurologic origin, but the fact that it is continuously present, especially in the foot, is a strong indication that it is not. Taken as a whole, the lack of consistency of the distribution of subjective complaints and the fact that the behavior of the complaints does not conform to that usually seen in organic disease of the nervous system would lead one to suppose that such does not exist. The nature of the disorder is not clear; the fact that it reproduces itself in somewhat identical fashion would lead one to believe that it is not an emotionally determined symptom; the possibility might be considered of a neurovascular disorder or even one of the disorders associated with histamine. While toxic phenomena are usually bilateral in character, it could be pointed out that histamine cephalalgia will usually occur only on one side of the face and repeat itself in identical fashion. It might be wise to give this patient a trial with antihistamine and/or ascorbic acid. One might determine whether histamine would precipitate or increase the subjective complaints.

IRRADIATED BLOOD

To the Editor:—What is the status of ultraviolet irradiation of the blood, and the "Knott hemo-irradiator"? Is it regarded as of clinical value?

Thomas P. Butcher, M.D., Emporia, Kan.

ANSWER.—There is no conclusive evidence that irradiation of the blood with ultraviolet light has merit. The studies in this field have suffered from the lack of adequate controls. The greatest possible usefulness of ultraviolet light in relation to blood lies in the radiation of pooled plasma to inactivate the virus of homologous serum hepatitis. However, the proper technique for such disinfection of plasma has not as yet been perfected.

EARLY ACQUIRED SYPHILIS

To the Editor:—A girl with active syphilitic lesions gave as her only source of contact a boy who had no history of either primary or secondary lesions and whose physical examination was normal. His qualitative Kahn reaction was positive. A quantitative test was not done at that time. He was treated with the twenty-six week Army plan of treatment consisting of forty injections of oxaphenarsine hydrochloride and sixteen injections of bismuth compound. His blood Kahn reaction was still positive after treatment with eight quantitative units. Spinal fluid was normal. Three months later the blood Kahn reaction was doubtful. No therapy had been given. Please discuss further therapy of this case assuming that the blood Kahn reaction remains positive.

M.D., Kentucky.

ANSWER.—It seems likely that the boy had early acquired syphilis. The twenty-six week army plan of treatment is usually effective. The serologic response of the boy seems to be that of early syphilis adequately treated. At the end of treatment, the titer was 8 and three months later, it had dropped to doubtful. Ordinarily this indicates a satisfactory response, and a negative reaction should be expected within a few months. As some patients' serologic reactions decline in titer slowly, a period of eighteen months from the beginning of treatment should be permitted to elapse before further treatment is considered.

If at the end of eighteen months following the institution of treatment the reaction is still positive and no lesions are present, the boy may be considered to have seroresistant syphilis, or if the titer has risen, a serologic relapse, or a reinfection. In either event, the boy should be given the benefit of an adequate course of penicillin, for which there are many treatment schedules. A simple schedule is that of 600,000 units daily of penicillin-oil-wax for ten consecutive days. Subsequent to this, if the spinal fluid is again negative and the physical examination reveals no evidence of syphilis, no further treatment is indicated.

MALARIA

To the Editor:—Living in an area where malaria is epidemic, I am particularly interested in an editorial in The Journal (p. 1176, August 2, 1947) in which the idea was suggested that "plasmochin" is advocated for use in conjunction with pentamidine in the treatment of malaria due to *Plasmodium vivax* to eradicate extra erythrocytic forms. Is this now admitted as routine therapy? I understood that it was applicable only for malignant forms.

M.D., China.

ANSWER.—There is a misconception of the article which appeared in editorials and comments of THE JOURNAL wherein it was assumed that "plasmochin" was advocated in conjunction with pentamidine in the treatment of *vivax* malaria. The improved treatment of malaria with pentamidine includes its simultaneous use with quinine but not "plasmochin." Actually, pentamidine is a less toxic and more effective compound than "plasmochin" and replaces the latter in the treatment of malaria. The dosage used in studies to date is 2 Gm. of quinine and 30 mg. of pentamidine in three doses daily for two weeks. Although this therapy has not been used extensively in the field, it has been found that recurring cases among former servicemen have disappeared completely after this type of ambulatory treatment.

HYPOGONADISM

To the Editor:—Please outline the treatment of hypogonadism in a girl aged 22 who has no mammary development, no pubic hair, primary amenorrhea, no development of vagina and the frame of an immature girl.

Louis A. D'Alecy, M.D., Staten Island, N. Y.

ANSWER.—There is insufficient information to permit determination of whether this girl is suffering from primary pituitary insufficiency or from congenitally aplastic ovaries with sexual infantilism. The distinction is important, since treatment for the latter condition is so much more satisfactory. There are many physical signs which will help in the differential diagnosis, and there is one helpful laboratory procedure: assay of the urine for gonadotropins, which assay gives a high reading in the presence of aplastic ovaries and shows little or no gonadotropins in cases of pituitary insufficiency. Some encouraging results have been obtained with the use of estrogens in the treatment of girls suffering from congenitally aplastic ovaries. A recent review of this subject can be found in the October 1947 issue of the *Journal of Clinical Endocrinology* (Lisser, H.; Curtis, L. E.; Escamilla, R. F., and Goldberg, Minnie B.: The Syndrome of Congenitally Aplastic Ovaries with Sexual Infantilism, High Urinary Gonadotropins, Short Stature and Other Congenital Abnormalities. Tabular Presentation of Twenty-Five Previously Unpublished Cases, page 665).

HYPERTHYROIDISM AND PREGNANCY

To the Editor:—Please inform me regarding management of pregnancy with hyperthyroidism being adequately controlled with propylthiouracil. The patient is a young woman who had two previous pregnancies with a moderate nausea and vomiting in the first trimester. Thyroid enlargement and symptoms of toxicity developed about two years ago and reached a severe stage with extreme nervousness, weakness, weight loss, and tachycardia. Her basal metabolic rate was between plus 60 and plus 70. For the past five months symptoms have been absent and she has gained weight and strength. Tachycardia has disappeared, and her basal rate has dropped to the upper limits of normal. She receives 150 mg. of propylthiouracil daily. Two months ago she became pregnant; she is beginning to have anxiety symptoms, although there has been as yet no return to a toxic state.

Burrell F. Eckardt, M.D., Sheboygan, Wis.

ANSWER:—The literature dealing with hyperthyroidism in pregnancy was recently reviewed by R. O. Mussey, S. F. Haines and E. Ward (*Am. J. Obst. & Gynec.* 55:609-618 [April] 1948). Thiouracil and related drugs have been used to control hyperthyroidism in pregnant women in a small number of cases reported in the literature. The occurrence of hyperplastic thyroids in a few of the fetuses calls for caution in the use of these drugs in pregnancy, although in a few cases they have been successfully used without demonstrable harmful effects. Of the goitrogenic drugs so far employed in the treatment of hyperthyroidism in pregnancy, reports seem to indicate that propylthiouracil can be used with greatest safety to the mother.

In 30 instances in which the patients received treatment at the Mayo Clinic, hyperthyroidism complicated pregnancy. The treatment carried out by Mussey, Haines and Ward included oral administration of Lugol's solution (strong iodine solution U. S. P.) and thyroidectomy for hyperfunctioning adenomatous goiters and Lugol's solution plus thyroidectomy, if needed, for exophthalmic goiter. Pregnancy did not seem to influence the course of hyperthyroidism in most cases. Likewise, proper treatment of the hyperthyroidism allowed the pregnancy to proceed normally. The standard treatment of hyperthyroidism by iodine and thyroidectomy can be carried out safely in the great majority of cases of hyperthyroidism complicating pregnancy and should be employed in this case if toxic symptoms appear.

HISTAMINE IN GASTRIC ANALYSIS

To the Editor:—References which I have for using histamine in gastric analyses say to use 0.1 mg. histamine for each 10 Kg. of body weight. Another reference advises 0.5 mg. as a total for the test in 1 cc. of solution. Does this quantity refer to histamine acid phosphate, or to histamine itself? If to the latter, may histamine acid phosphate be used in a gastric analysis? I have a solution of histamine acid phosphate, 0.55 mg. in 1 cc. (equivalent to histamine 0.2 mg.). In order to give 0.5 mg. histamine as my reference states, should I give 1 cc. of my present solution or give 2.5 cc. of the solution? In a recent patient whose blood picture was that of pernicious anemia I found no free hydrochloric acid after alcohol or histamine. The amount of histamine used was 0.55 mg. histamine acid phosphate. The patient weighed 150 pounds (68 Kg.). Is this a satisfactory test?

M.D., Kentucky.

ANSWER:—On looking over the statements regarding this subject in standard reference books, one is amazed at the differences in dosages suggested. Some of this confusion apparently arises because of the number of preparations of histamine which are commercially available. The drug may be purchased as acid phosphate or the dihydrochloride. The active portion of these substances is the histamine which they contain. The amount of histamine base in acid phosphate represents 36 per cent and in the dihydrochloride 60 per cent. The dosage used should always be calculated in terms of the histamine base. Either salt may be used, and both of the compounds should be dissolved in isotonic sodium chloride solution.

The usual dose of 0.1 mg. of histamine base for each 10 kilograms of body weight may perhaps be a little high. No harm will be done, however, if no more than 0.7 mg. is used. Satisfactory results can be obtained by using 0.3 to 0.5 mg. of histamine base.

ACNE VULGARIS

To the Editor:—I am seeking information on the treatment of acne vulgaris with estrogenic substances, particularly in male patients. What are specific dosages, therapeutic regimen and limitations of this therapy?

Lieut. Donald H. Ewalt, M.C., Fort Sill, Okla.

ANSWER:—Estrogenic substances should not be used in the treatment of acne in either boys or girls. They may have a profound effect on the patient, which would not be desirable. There is no assurance that they would have a good effect on the acne itself. It is suggested that other methods be employed for acne rather than hormone therapy.

ANAL FISTULA

To the Editor:—Kindly inform me whether there is any treatment for anal fistula and perianal abscesses except surgical treatment.

Oscar Gelbart, M.D., Ossining, N. Y.

ANSWER:—In every kind of anal fistula and abscess, there is an opening into the bowel with a tract leading through the soft parts to the skin. In order to obtain a cure, this opening in the bowel must be closed. Small tracts have closed as a result of inflammation. Such small openings may possibly heal spontaneously if the patient is given succinylsulfathiazole or sulfaguanidine, 3 or 2 Gm. four times a day, and, in addition, if he takes a 10 ounce water enema every day before movements.

Some surgeons have tried treatment by injection of sclerosing solutions such as sodium morrhuate. If this is done when infection is present the bacteria that are present in the bowel are apt to produce an abscess. The result is uncertain and the results with surgery properly executed are so satisfactory that there is little reason to attempt treatment by injection.

AMMONIATED MERCURY

To the Editor:—In the treatment of dermatitis of the scalp is it safe to apply a 5 per cent ammoniated mercury ointment to the entire scalp? Could such an ointment give rise to a toxic reaction? Does any pharmaceutical house supply ammoniated mercury in a water-miscible base?

M.D., Florida.

ANSWER:—Dermatologists not infrequently prescribe ammoniated mercury in 5 per cent concentration for use on the entire scalp in adults. Ordinarily the concentration is reduced for use in children. Unless the patient is sensitized to mercury, there would be no reason to expect trouble from its use, for usually the ointment is applied only for short periods and little of it is required to cover the scalp. The ointments containing mercury which are prepared by pharmaceutical houses for the market apparently are not made with water-miscible bases.

RESIN DERMATITIS

To the Editor:—Please discuss methods of prevention of contact dermatitis from a resin used in gluing plywood together called "P. R. 14" or "amberlite" made by the Resinose Products and Chemical Company, Washington Square, Philadelphia 5.

M.D., Wisconsin.

ANSWER:—In order to prevent dermatitis from resin, it is necessary to avoid contact with it, for desensitization to resin cannot be induced. If it is impractical to wear gloves during work, contact can be avoided by wearing any of the so-called chemical or invisible gloves or protective ointments that are advertised for use in industry. There are several available on the market. They serve adequately to protect the skin against the action of irritants except when it is necessary to wet the skin, for these protective preparations are usually soluble in water.

PAGET'S DISEASE

To the Editor:—Please give information on the use of aluminum acetate in the treatment of Paget's disease.

Samuel Waldman, M.D., Brooklyn.

ANSWER:—Agreement is lacking amongst authorities as to whether aluminum acetate in the treatment of Paget's disease does any real good. However, one is dealing with a chronic disease and there is sufficient evidence from reliable observers to warrant at least a trial of the drug in treating Paget's disease (Paget's bone disease or osteitis deformans).

The aluminum acetate solution is made in the following proportion:

Solution aluminum acetate.....	8 ounces
(Burrow's solution)	
Syrup of tolu.....	3 ounces
Honey sufficient to make.....	16 ounces
1 teaspoonful two or three times daily	

HERPETIC STOMATITIS

To the Editor:—I should like to supplement the answer to the query on "herpetic stomatitis" in *The Journal*, Dec. 13, 1947, page 1040. First, herpetic stomatitis is not necessarily accompanied by external lesions of herpes simplex, as the writer states; such an association is exceptional. Second, it is by far the most frequent reason for recurrent oral ulceration over a period of many years. Finally, it is almost always relieved, and sometimes actually cured, by repeated vaccination against smallpox, or perhaps better, repeated biweekly intradermal injections of smallpox vaccine suspended in saline solution. The technic is described in detail in the *Proceedings of the Staff Meetings of the Clinic, Honolulu*, for August 1944.

Harry L. Arnold Jr., M.D., Hawaii.

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SOME ACTIVITIES AND IMPACTS OF THE AMERICAN BOARD OF INTERNAL MEDICINE

Chairman's Address

CECIL JAMES WATSON, M.D.
Minneapolis

In exercising the Chairman's prerogative this afternoon I wish to address the Section on certain activities and impacts of the American Board of Internal Medicine. I feel impelled to discuss this topic because of certain rather widespread misunderstandings that have arisen about the board. As one of the two co-sponsoring organizations this Section must obviously have a deep interest in the board's policies and activities; hence I am sure you will appreciate the reasons for my choice of this subject. What I shall have to say represents my own information and views as an individual member of the board; nevertheless, it is a pleasure to state that the other members have been kind enough to read this paper and approve of its being presented to you today.

The first of the misunderstandings to which I referred a moment ago relates to the constitution and degree of autonomy of the board. I find the idea commonly held that the board is a fully autonomous self-perpetuating group, answerable only to its own dictates. In fact, the board is simply the instrument of this Section and of the American College of Physicians. Its membership and policies are subject to the direction of these two agencies through the mediums of election of new members and of influence by discussion and advice. In its organization the board is guided in a general way by the by-laws of the Advisory Board for Medical Specialties, this being composed of representatives from each specialty board as well as the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges and the American Hospital Association. It is perhaps well to note that the main responsibility for general policy formation lies with the Advisory Board.

Contrary to widespread belief that the Board of Internal Medicine has broad latitude in forming policies affecting the practice of medicine, it may be emphasized that the only function and responsibility with which it is charged is that of examination to determine fitness for certification as an internist. It is true that the training requirement for eligibility to examination has had and will continue to have a considerable impact

on the practice of medicine. It has been argued that the establishment of a training requirement is not the function of an examining board. Nevertheless, it was the will of the founders, representing this Section and the college, that such a requirement be established, and, as you know, it has been in effect from the beginning, except for those who graduated prior to 1936, since the requirements were first published late in that year. Until last year the prerequisite to examination consisted of three years of formal training and two years of practice. The board then reaffirmed its belief in this program, but at the same time relaxed the requirement in favor of longer periods of practice and shorter periods of formal, or residency, training. The new plan recognizes that a man may become a capable internist by different pathways, and it therefore allows considerable latitude in the type of program leading to eligibility for examination. There has been a good deal of unawareness of this change. I will not take time to discuss it now, but will simply point out that it has been fully described in *THE JOURNAL* (134:1399 [Aug. 16] 1947) and in the *Annals of Internal Medicine* (27:845 [Nov.] 1947).

Since the board is an examining board, it is self evident that the character of its examinations is the keystone of its structure; on this score, too, there have been some confusion and misunderstanding. The policy of the board since its incipency has been to formulate examinations intended to determine whether a candidate, if certified, might be regarded not only as an able practitioner of internal medicine but a capable consultant as well.

The comments which I wish to make on this subject have the approval of the board's committee on examinations for 1948. Dr. M. A. Blankenhorn, chairman, Dr. Alexander Burgess and Dr. Truman Schnabel. Somewhat more than two years ago the board abandoned the essay type of examination in favor of an objective and comprehensive type. I have heard it said that the board was obliged to resort to the "true-false" method of examination because of the large number of candidates. There can be no doubt about the great throng of candidates in the past two years, and in a certain sense the objective examinations used have been of "true-false" type. This term, however, is more correctly applied to an examination consisting of single statements which are true or false, a type which has not been used by the board as it is much less discriminating than the multiple choice examination. The latter was selected not merely, or even chiefly, because of the ease and speed of correction, but on the basis of proved superiority from a number of other standpoints. I may pause to remark that there appears to be relatively little general awareness, among teachers of medicine, of studies which have been documented by psychologists

From the Department of Medicine, University of Minnesota Hospital, Minneapolis.

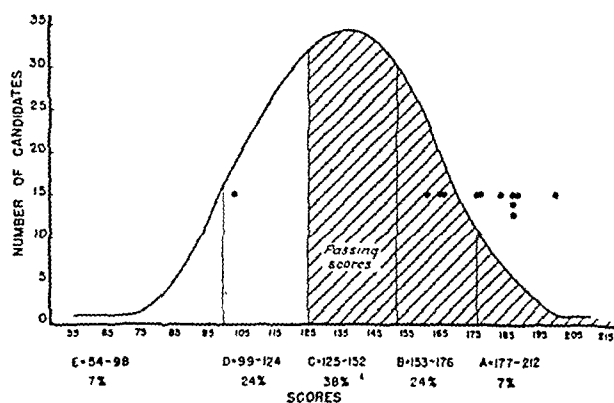
Dr. Victor W. Logan of Rochester, N. Y., librarian of the board's Examination Committee, provided the data in the figure and in table 2. Read before the Section on Internal Medicine at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 24, 1948.

and students of education with respect to the superior merit of properly prepared multiple choice examinations.¹ This is not to say that the ones thus far given by the board have been models of perfection. Certain deficiencies have been recognized, and a constant effort to minimize them is being made; nevertheless, I am satisfied that these examinations have been superior to the essay type. They have permitted a much broader sampling of the candidate's general knowledge of internal medicine and the basic sciences pertaining thereto; as the name implies, they have been wholly objective and the correction has been correspondingly fair and uniform, which it can never be with the long essay type. It has been argued that the multiple choice examination does not probe the candidate's ability to reason as well as the essay type. This depends largely on the character of the question, which may be devised to test nothing more than factual knowledge or experience or to provide a situation which requires considerable analysis and reasoning. The following problem is an example of the latter variety:

A physician, 76 years of age, had diabetes for many years. He received 20 units of crystalline zinc insulin daily in divided doses. He experienced sudden onset of impaired vision while

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Frequency distribution curve of candidates' scores.

he was reading the newspaper, with transitory confusion and disorientation. There was painful sensation above the right eye and tenderness in the right supraorbital notch. The examiner's finger was not seen as it came up on the left side of the face until it reached the midline; the patient perceived it at the usual location as it came up on the right or from above or below. The right optic disk was indistinct, while the left was normal in appearance. There were no other abnormal physical observations.

It is most probable that the syndrome described was due to:

1. A retrobulbar (arteriosclerotic) hemorrhage on the right side, involving the optic and supraorbital nerves.
2. Hemorrhage from a small aneurysm of the internal carotid artery just at the circle of Willis.
3. Rupture of a craniopharyngioma (Rathke pouch cyst).
4. Thrombosis of a branch of the right posterior cerebral artery.
5. Thrombosis of the cavernous sinus.

This situation tests the candidate's knowledge of anatomy as well as his clinical experience and analytic ability. He must recognize, to begin with, that the patient has homonymous hemianopsia, which narrows the choice to either 2 or 4. On an anatomic basis alone 3 or 5 would be remote possibilities, but the candidate's knowledge of pathology and his past experience, if at all adequate, will induce him to reject them. Correct evaluation of the painful sensation above the right eye and the supraorbital notch tenderness depends on his knowledge that the supraorbital nerve is a branch of the first or ophthalmic division of the trigeminal, this division lying adjacent to the internal carotid artery, anterior to the circle of Willis and in close relationship to the optic nerve just posterior to the chiasm. This location is in good agreement with the observation of homonymous hemianopsia of the left side; hence 2 is the correct choice.

This question that I have just shown you has not been used in an examination. If it were to be used, how would the board determine whether it is too difficult or too easy? In the first place, it must be clear that the members of the board's examination committee can answer it with unanimity. If they concur on any given question and agree that it is acceptable in other respects as well, it may then be used in the next examination. But, you will say, perhaps it is still too difficult, in spite of the committee's judgment. In this connection I may assure you that the examination committee in the main leans over backward, as the saying goes, to avoid inclusion of questions that might be regarded as unfair, ambiguous, tricky or simply too difficult. Nevertheless, a further device is employed to gain more accurate judgment as to the difficulty of the individual questions and the examination as a whole. Each member of the board selects one or two capable internists in his locality who have been certified by the board for at least three years. These men, without advance notice, are requested to take the examination within a few days after the date on which it is given to the candidates. Their score and the manner in which they handle individual questions are then carefully scrutinized. If a significant number of the "guinea pigs" disagree on a question it is usually scratched, that is to say, not counted in scoring the candidates' papers. After subtraction of points for questions which have been scratched on the basis of these trial runs, the candidate's scores are calculated and plotted in the form of a frequency distribution curve. An example, that of the March 1947 examination, is shown in the figure.

The form of this curve in itself is reassuring as to the reliability of the examination. The passing score was set at 125. The individual scores of the certified "guinea pigs" are indicated. It is seen that, with one exception, they did very well. Human frailty is such that one should scarcely expect all the guinea pigs to pass in all instances, though as a rule it is gratifying to find their scores well in the upper brackets. It is of some interest to consider the factors which might have been responsible for the low score in this one instance. Perhaps the essay and oral examinations which permitted his certification several years previously dealt more kindly with him than his knowledge or experience warranted; or perhaps he had since then allowed his reading and study to lapse to such an extent that he was able to answer less than half of the objective questions. One of the advantages of the objective multiple choice examination is that it permits

1. The multiple choice comprehensive examination is now used by the Association of American Medical Colleges (Professional Aptitude Test), the Cooperative Test Service of the American Council on Education and the United States Armed Forces Institute.

a broad sampling of the candidate's knowledge of recent advances and hence of the extent to which he is striving to "keep up with the literature." It also permits the board to gain insight into the breadth of his information and experience in those disciplines and diseases which are more or less intimately related to internal medicine, such as neurology, clinical pathology, allergy, tuberculosis and syphilis. The question which was given as an example a moment ago was mainly neurologic in character. The breadth of the examination bears directly on the question of the board's impact on specialization, an important matter to which I shall return in a moment. First, however, I wish to add another point with respect to the examination itself. Further information is readily obtained as to the relative "hardness" of individual questions by reference to the performance of the upper, middle and lower thirds of the candidates, the division in thirds being based on scores for the entire examination. Thus, if it is found that 85 per cent of the upper third answered a given question correctly, as compared with 60 per cent of the middle third and 35 per cent of the lower third, this reveals that the question discriminates satisfactorily and that it may be used to advantage in a subsequent examination. If, however, 98 per cent of the upper third, 95 per cent of the middle third and 90 per cent of the lower third answer the question correctly, it is obviously too easy. The converse is true if only 35 per cent of the upper third, 32 per cent of the middle third and 25 per cent of the lower third make the correct choice. Such questions do not discriminate well and must be either discarded or altered in the proper direction if they are to be used again. The possession of a large pool of questions from which to draw permits repeated use of discriminating questions at suitable intervals. This pool, of course, is steadily replenished by questions relating to newer information, while those believed to have become obsolete are discarded or altered.

The purpose of the oral examination is to determine the candidate's clinical ability and whether his training and experience are sufficient to qualify him as a consultant in internal medicine. The members of the board assume that the candidate is well aware of this and that he elects to come up for the examination only after an ample period of preparation. Particular attention is given in the oral examination to the following attributes:

I have heard it said that the examiners ask questions about what they know, rather than what the candidates know. Obviously, however, the examiners are chosen because of an assumed broad knowledge of internal medicine, so that their questions may be expected to relate to what the candidates *ought* to know. It is axiomatic that the members of the board are careful to avoid any undue emphasis on topics of their own special interest.

There has been a gratifying correlation between the results of the multiple choice written and the oral examinations, as shown in table 2.

To turn for a few moments to certain impacts of the board, I wish to remark first on the matter of specialization. It was inherent in the establishment of specialty boards that specialization along the well established cleavage lines would be emphasized. It is not too surprising that various attempts are being made to promote further subspecialization by the formation of individual boards. The American Board of Internal Medicine has

four subspecialty committees, in cardiovascular, pulmonary, gastrointestinal and allergic diseases. I think that it is safe to say that the board feels just as strongly now as in the past that it would be undesirable to establish independent boards which would examine in these subspecialties alone and that persons who are to be specially certified in these divisions should be capable of passing the regular examination in internal medicine. If they are to have a special interest in allergic or pulmonary diseases, it is essential that their training and experience be sufficiently broad so that they will naturally consider allergic or pulmonary manifestations against the whole background of internal medicine. I believe that this statement is sufficiently obvious not to require any illustration or amplification.

There is a degree of specialization which is, no doubt, in the best interest of medicine, but beyond which more harm than good may be anticipated. It is my opinion that the policy and the type of examination of the American Board of Internal Medicine constitute a bulwark against undue specialization which ought not be overthrown.

TABLE 1.—*The Oral Examination*

1. Technic of physical examination
2. Experience in type of case at hand
3. Interpretation of laboratory data
4. Knowledge of basic sciences
5. Organization of entire problem
6. Knowledge of recent advances in medicine
7. Qualities desired in a good internist

TABLE 2.—*Correlation of Proficiency in Written and Oral Examinations*

Score *	Number of Candidates	Percentage Passing Oral (1948)
50 plus and up.....	4	100
40 plus.....	19	78
30 plus.....	23	70
20 plus.....	25	65
10 plus.....	32	56

* Points above the passing score.

The question has been raised whether the specialty boards have an undesirable impact on the younger generation in medicine, in the sense that their examinations exert a leveling influence or tendency toward mediocrity. The thought has repeatedly been expressed that the boards are responsible for a regimentation which tends to prevent persons with special talent from achieving what they might in other circumstances. If this were true, it would relate more particularly to training and accomplishment in medical research. If young men with investigative talent were being lost to medical research in greater number than would otherwise prevail, this would indeed be a serious matter. I have studied this question with some care and have discussed it with many clinical investigators and medical teachers, and I feel confident that it may be answered in the negative. To those in my own school who have shown the necessary interest and zeal for research in internal medicine, the certification by the board has not been the prime objective. They have simply taken it in their stride when the time was ripe. Thus far, at least, there has been no instance in my experience in which such a person has given up a promising career in teaching and research in favor of a more remunerative practice, simply because of having become certified.

There have been, however, a great many with little or no interest in research, whose prime objective has been certification. It is safe to say that the majority of these have had more and better training than they would have had without this objective. A great many of them have gained habits of reading about disease and of investigating their patients which will further their entire careers as physicians. It has been said that unless the examination is repeated every five years or so there is no way of knowing whether a man's certification continues to be deserved. This is true, but it does not vitiate the belief that the habits gained in the training prior to the examination will maintain a great many at a higher level of thought and practice than would otherwise be probable. While there would be both interest and advantage in reexamination every five years, it is a practical impossibility, but this fact in no way detracts from the value of the initial examination.

I wish now to refer briefly to the impact of the board on the general practice of medicine. There are two particularly important aspects of this matter. The first relates to the supply of general physicians, especially for smaller communities. Again it was inherent in the establishment of specialty boards that relatively more of the medical graduates of the country would enter specialties and relatively less would take up general practice. Except for the war, it is doubtful that this would have created any significant disparity. During the war preferment was given to specialists, and this naturally provided a strong impetus to specialty training, which is residual in the salary scales of the Veterans Administration at the present time. This may be regarded as unfortunate, but no one can blame the latter agency for seeking the best trained personnel and taking advantage of certification to avoid the difficulty of making certain staff appointments under one pressure or another. Nor can it be doubted that the existence of the specialty boards and their certification has been a major factor, since 1946, in the elevation of the Veterans Hospitals to the present high plane of achievement in professional care and graduate medical education. The same may be said, in fact, of many private hospitals throughout the country.

Since the end of the war the American Board of Internal Medicine has certified 1,247 physicians. It is unlikely that a majority of these will quickly become established as consultants in large centers. Not a few have entered group or private practice in smaller communities. These men are serving as family physicians and are thus contributing materially to the first line care of the sick. Unlike many general practitioners, their time is not divided between surgery and medicine; hence they are able to consider the problems of their practice in more detail and to meet the challenge of functional disease in a much more adequate way. The magnitude of this challenge was emphasized by Dr. Wearn in his chairman's address to this Section last year; it is apparent, I am sure, that in the proper handling of this truly large segment of the physician's practice time is an essential element, and I submit that one who is first and foremost a physician is more likely to give adequate time to the functional problems than one who is striving to serve as both general surgeon and physician. Because this touches on a difficult but highly important aspect of the question of specialization, I should like to digress for a moment, to consider it in more detail. I think that we have all become increas-

ingly aware that the growth of knowledge and technics of medicine and surgery has long since outstripped the ability of one mere mortal to master and apply them to the best advantage. One may venture to predict that the next decade will find many more who have determined to build a general practice on the cornerstone of internal medicine rather than surgery. A number of institutions, including my own, are offering two year internships in training for general practice. The pattern of these consists of a year of medicine, including neurology, psychiatry and dermatology, and a second year, divided equally between obstetrics and gynecology, pediatrics and emergency surgery. Training in elective surgery is omitted entirely. A third year of assistant residency in medicine is strongly recommended, but with or without this the physician may be expected to serve as a family physician in a truer sense, rather than a general practitioner worshipping at the shrine of elective surgery. The facility of modern transportation is such that his surgical cases are readily gotten into the hands of a capable surgeon working in a fully equipped hospital. He must be determined to forego the larger income which the fees for operations would provide; if he has regrets on this score, let him read Hugh Morgan's fine essay "Professio" (*Ann. Int. Med.*, May 1948). The physician with this training and experience in general practice is admirably suited to specialization in internal medicine at a later date, should he so elect. By means of the alternate plans previously referred to, it would be unnecessary for him to take additional formal training unless he wished. During his general practice, whatever its tenure, he would not be faced by the dilemma which must be very real in the case of many general practitioners seeking membership in the American College of Surgeons; i. e., that, while it is required that a principal percentage of their practice must be surgical, a large majority of the patients for whom they accept responsibility have medical, and often functional, complaints, rather than a condition requiring operation.

In closing I should like to say that I am sure that the other members of the board view with regret, as I do, the exclusion of noncertified physicians from the staffs of certain hospitals. I feel that a duly licensed doctor of medicine should not be denied the privilege of giving his patients hospital care solely on the basis of not being certified by a board. On the other hand, the staff of any hospital ought to establish a fair mechanism for determining that none of its members, certified or otherwise, are abusing the privilege of membership. Hospital staffs ought to take a more independent view of the matter than regarding board certification as the sole arbiter of a physician's membership. Boards are bound to make mistakes, and men are bound to vary in the way they maintain their standards of practice. This being accepted, it would seem obvious that continuing merit as a physician or surgeon ought to be the only basis for membership on a hospital staff.

Thus, while the board has been the target of criticism on various scores, I am inclined to think that it has often been misdirected. I believe that no one can gainsay the really significant effect of its activities in elevating the plane of medical practice and of graduate medical education. This being accepted, then the board's only problem is one of continuous striving to uphold its standards and improve the mechanisms of its operations.

EPIDEMIOLOGY OF ENCEPHALO-
OPHTHALMIC DYSPLASIATHEODORE H. INGALLS, M.D.
Boston

During the past decade ophthalmologists have pioneered advances in the knowledge of prenatal disease which have transcended the confines of their specialty and acted as a ferment on investigations by pediatricians, obstetricians, pathologists and students of public health. The first impetus came from the observations of Gregg on the permanent consequences to infants which follow rubella of the mother in early pregnancy.¹ A drastically altered point of view of physicians toward minor disorders of gestation was the result. The implications are that the principle at work is the key to many of the structural defects characteristic of the developmental period of life.² Thus, Terry's demonstration³ that retrolental fibroplasia is a defect not merely of infants, but for the most part of prematurely born infants, challenged further study and interpretation. Krause⁴ established that the condition was generally associated with dysplasia of the brain—hence the name encephalo-ophthalmic dysplasia. Reese and Payne⁵ pointed out a significant association with single or multiple hemangiomas of the skin; all of which gives further proof to the accepted concept that ocular disease is only a part of a broader clinical pattern.

The frequency of encephalo-ophthalmic dysplasia was reported by Krause to be 1 to 4,000 total births at the Chicago Lying-In Hospital (time not stated). Assuming that 5 per cent of the total number of infants born are stillborn or nonviable, this ratio may be converted into a rate of about 0.26 per 1,000 live births. At the Boston Lying-In Hospital from 1938 to 1945, Clifford and Allers⁶ observed that in 13 per cent of 254 babies weighing less than 4 pounds (1,814 Gm.) at birth there ultimately developed the ocular sign of retrolental fibroplasia. On this basis the rate of encephalo-ophthalmic dysplasia at the Boston Lying-In Hospital for those years is computed as 1.1 per 1,000 live births.⁷ This estimate appears conservative, since missed cases of retrolental fibroplasia presumably constitute the main variable.

The association between encephalo-ophthalmic dysplasia and prematurity is clearly demonstrated by the data of figure 1, which show the distributions of the birth weights of 41 babies in whom this ocular disease

developed, and of 1,000 babies from the general population.⁸ It is evident that the incidence of the disease in any particular hospital or city will bear a relation to the numbers of premature infants born and surviving.

EPIDEMIOLOGIC IMPLICATIONS

At least two epidemiologic factors must be considered in any explanation of the significant difference in distribution of birth weights of surviving babies in whom the lesions of encephalo-ophthalmic dysplasia develop compared with viable infants of the general population. The difference may be conditioned by some characteristic of the infant host or by an alteration of the prenatal or neonatal environment. Investigation reveals that an active interplay of both these factors may be involved in production of the specific end result. An important attribute of the decidedly premature infant is the patent hyaloid artery. Terry emphasized that the terminal ramifications of this vessel nourish the retrolental site which is classically involved in the ocular disease⁹ (fig. 2). Involution of this structure is complete at about the eighth month of fetal life.¹⁰

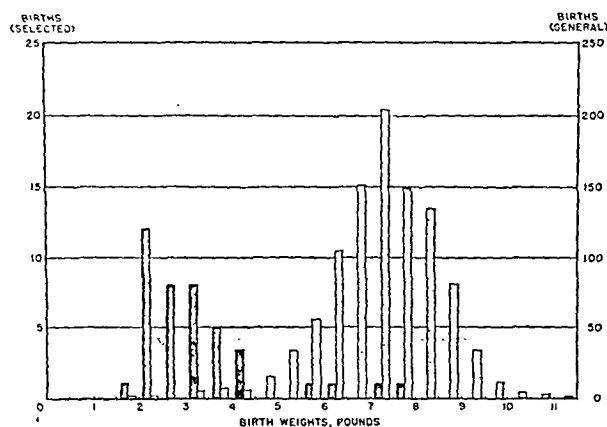


Fig. 1.—Distribution of birth weights of 1,000 surviving babies of a general (Lying-in Hospital) population (light bars) (mean 7.25 pounds [3,289 Gm.] and standard deviation 1.2 pounds [544 Gm.]) and 41 surviving babies in whom encephalo-ophthalmic dysplasia developed (dark bars) (mean 3.3 pounds [1,497 Gm.] and standard deviation 1.3 pounds [590 Gm.]). Source: Terry,³ Krause⁴ and Ingalls.^{11b}

after which disease of the tunica vasculosa lentis can hardly arise as a purely developmental defect. An analogous defect is imperforate anus, which never arises in postnatal life and assuredly cannot occur after the anal membrane has perforated in the first trimester of pregnancy.

That the placental environment may be a second factor is indicated by abundant evidence of an association between encephalo-ophthalmic dysplasia and unusual or abnormal placental conditions. Table 1 shows a strikingly increased frequency among twins and triplets, and in the presence of placental disease and hemorrhage, over expected rates for the general population. Such conditions are of course, the usual precursors of prematurity itself, and their over-all significance in relation to encephalo-ophthalmic dysplasia awaits further study. Of significance however, is the occurrence of most of the antepartum hemor-

8. Sample taken from the records of the Boston Lying-In Hospital during 1947.

9. Terry, T. L.: Fibroblastic Overgrowth of Persistent Tunica Vasculosa Lentis, *Am. J. Ophthalm.* 25: 1409, 1942.

10. Reese and Payne.⁵ Terry, T. L.: Ocular Maldevelopment in Extremely Premature Infants: Retrolental Fibroplasia; General Consideration, *J. A. M. A.* 128: 582 (June 23) 1945.

Aided by a grant from the Perkins Fund.

Read before the Section on Ophthalmology at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 23, 1948.

From the Department of Epidemiology, Harvard School of Public Health; the Department of Pediatrics, Harvard Medical School, and the Children's Hospital of the Children's Medical Center, Boston.

1. Gregg, N. M.: Congenital Cataract Following German Measles in Mother, *Tr. Ophth. Soc. Australia* 3: 35, 1941.

2. (a) Ingalls, T. H., and Gordon, J. E.: Epidemiologic Implications of Developmental Arrests, *Am. J. M. Sc.* 214: 322, 1947. (b) Gordon, J. E., and Ingalls, T. H.: Death, Defect and Disability in Prenatal Life, *Am. J. Pub. Health* 38: 66, 1948.

3. Terry, T. L.: Fibroblastic Overgrowth of Persistent Tunica Vasculosa Lentis in Premature Infants: Report of Cases—Clinical Aspects, *Arch. Ophthalm.* 29: 36 (Jan.) 1943.

4. Krause, A. C.: Congenital Encephalo-Ophthalmic Dysplasia, *Arch. Ophthalm.* 36: 387 (Oct.) 1946.

5. Reese, A. B., and Payne, F.: Persistence and Hyperplasia of the Primary Vitreous, *Am. J. Ophthalm.* 29: 1, 1946.

6. Clifford, S. H., and Allers, O. E.: Personal communication to the author.

7. Total live births from Jan. 1, 1938, to Sept. 1, 1945, the period covered, were 34,040; 255 of the babies weighed less than 4 pounds. Since infants under 4 pounds accounted for only 29 of the 34 babies with retrolental fibroplasia born at the Boston Lying-In Hospital between 1938 and 1945 and 37 of 41 reported by other investigators, a factor of 66/75 was taken into account in calculating the rate of retrolental fibroplasia.

rhages¹¹ (as represented by the black dots in figure 3) in the fifth, sixth and seventh months of pregnancy. This is before the tunica vasculosa lentis has completed involution. The timing is in distinct contrast to that of a similar phenomenon (represented by the open circles) observed in early pregnancy among mothers of mongoloid babies.^{2a} If the hemorrhages bore no rela-

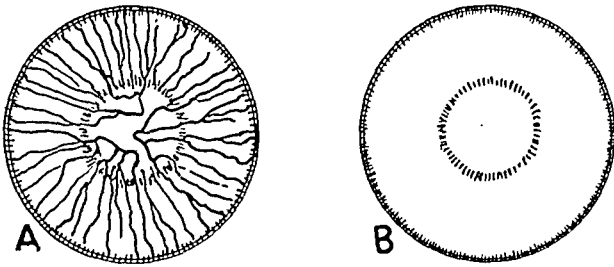


Fig. 2.—A, drawing of the tunica vasculosa lentis from the eye of a baby born six weeks prematurely (after Terry). B, diagrammatic representation of a human eye at term, following involution of hyaloid artery and tunica vasculosa lentis.

tion to the particular disease of the baby, they should be distributed at random. They are not. The fact leads to a conclusion that antenatal hemorrhage of the mother does bear a causative relation to both defects of the baby in the groups studied.

COMMENT

The data indicating a relation between encephalo-ophthalmic dysplasia and specific conditions which constitute placental environment point to the possibility that action of the causative agent is favored by them. The associations with placenta previa, antepartum hemorrhage and eclampsia suggest the hypothesis that anoxia represents one possible causative agent. Clifford explored the relation of placenta previa and antepartum hemorrhage to asphyxia of the fetus¹³ in a postmortem

study of 11 infants, all delivered by cesarian section prior to labor. He concluded: “. . . interference with placental circulation as a result of hemorrhage from placenta previa apparently produces in the fetus an initial stage of intense blood vessel congestion that may be followed by the liberation of edema fluid, hemorrhage and even tissue necrosis.” The effects were noted to “. . . involve the organism as a whole even though symptoms referable to one part of the body . . . may dominate the picture.”

Eclampsia may produce anoxic insult to the fetus through premature separation of the placenta or infarc-

TABLE 1.—Encephalo-Ophthalmic Dysplasia and Placental Environment; 120 Collected Cases*

Placental Environment	Number of Cases	Rate per 1,000 Live Births	
		Observed	Expected for General Population†
Twin placenta.....	16	133.3	10.6
Triplet placenta.....	3	25.0	0.1
Placenta previa.....	9	75.0	5.5
Placental hemorrhage.....	20	166.6	...
Preeclampsia or eclampsia.....	9	75.0	2.0
Miscellaneous placental disease ‡	5	41.6	...

* Sources: Terry,³ Krause,⁴ Reese and Payne,⁵ Ingalls^{12b} and Clifford and Allers.⁶

† Sources: Footnote 17. Stander, H. J.: Williams' Obstetrics: A Text-book for the Use of Students and Practitioners, ed. 8, New York, D. Appleton-Century Company, Inc., 1941, and Clifford, S. H.: Reduction of Premature Infant Mortality Through Determination of Fetal Size in Utero: Attempt to Control Weight at Birth According to Complication of Pregnancy Present, J. A. M. A. 103: 1117 (Oct. 13) 1934.

‡ Two cases of premature separation of placenta and 3 cases of prolonged seepage of amniotic fluid.

TABLE 2.—Summary of Data Graphically Shown in Figure 3

	Group With Mongoloid Infants	Group With Encephalo-Ophthalmic Dysplasia
Number of hemorrhages.....	24	12
Mean month of hemorrhage.....	2.25	5.50
Standard deviation.....	1.33	1.65
Standard deviation of the means.....	0.282	0.36
Difference of the means.....	3.25	
Standard deviation of the difference.....	0.413	
Critical ratio (difference of the means divided by the standard deviation).....	7.86	

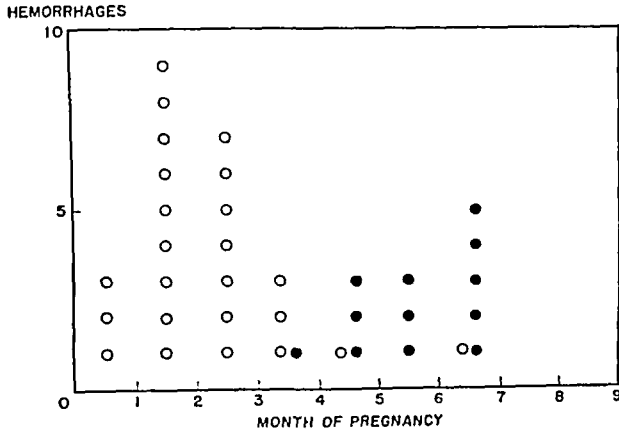


Fig. 3.—Diagram of antepartum hemorrhages, arranged by month of pregnancy: 8 pregnancies productive of babies with encephalo-ophthalmic dysplasia (hemorrhages represented by black dots) and 20 pregnancies productive of mongoloid infants (hemorrhages represented by circles). There were more hemorrhages than pregnancies, for some of the mothers had been in more than one month. The data graphically shown in the chart are summarized in table 2.

11. When these two types of pregnancy are complicated by maternal intercurrent infections, there is evidence that similar distributions occur.¹² The observation awaits confirmation and interpretation.

12. (a) Ingalls and Gordon.^{2a} (b) Ingalls, T. H.: Congenital Encephalo-Ophthalmic Dysplasia—Epidemiologic Implications, Pediatrics 1: 315, 1948.

13. Clifford, S. H.: Asphyxia of the Fetus and the Newborn Infant, Am. J. Obst. & Gynec. 30: 388, 1940.

14. Hertig, A.: Involution of Tissues in Fetal Life, J. Gerontol. 1: 96, 1946.

15. Kellogg, F. S.: Toxemias of Pregnancy, Clinics 4: 585, 1945.

16. Faber, H.: Cerebral Damage in Infants and in Children: Some Observations on Its Causes and the Possibilities of Its Prevention, Am. J. Dis. Child. 74: 1 (July) 1947.

That the mortality rate rises significantly¹⁷ and the mean birth weight falls with each additional member of a multiple pregnancy is common knowledge. Newman¹⁸ ascribed the main cause of the excessive prenatal mortality of twins and supertwins to "... crowding, using this term in the broad sense to include all damaging effects due to interference of one fetus with another." Among other factors, "... there is competition between the fetal blood vessels of the two individuals (3, 4, or 5 in the cases of higher one-egg sets) for a placental area adequate for only one individual." Furthermore, "... a premature infant whether a twin or singleton is far more delicate and more easily injured at birth than a full-term baby"—in other words, the premature baby represents a susceptible host.

PRINCIPLES OF A PROGRAM FOR PREVENTION

Any program for prevention of a disease rests primarily on an understanding of causative factors. The hypothesis that sublethal oxygen deprivation is a causative agent for encephalo-ophthalmic dysplasia can be critically tested by direct methods for the determination of the oxygen saturation of maternal and fetal blood and correlating low values—particularly those obtained during periods of hemorrhage, toxemia or difficult labor—with the subsequent development of disease. If the hypothesis is confirmed, measures directed toward the maintenance of maternal-fetal oxygen saturation during the antenatal period of stress are indicated. Since the agent of disease (anoxia) is only one of three interacting factors productive of disease, the other two (host and environment) must be the object of general study and preventive measures. These are already the general objectives of modern obstetrics, namely, maintenance of a favorable placental environment, permitting the orderly intact development of the fetus beyond that stage of relative susceptibility which characterizes prematurity.

SUMMARY

Epidemiologic evidence is presented indicating that the production of encephalo-ophthalmic dysplasia results from the interaction of factors related to the fetal host and to an unusual or abnormal placental environment. One such factor in the fetus is the presence of the tunica vasculosa lentis until the eighth month of fetal life. After involution, disease of the tunica vasculosa lentis can no longer arise as a purely developmental defect. The importance of environment is suggested by high rates for multiple births, toxemia of pregnancy, placental diseases and hemorrhages among mothers of 41 babies in whom encephalo-ophthalmic dysplasia developed. An etiologic relation between antenatal hemorrhage of the mother and disease in the child is indicated by the occurrence of most of the hemorrhages in the fifth, sixth and seventh months of gestation. Significance of this timing is indicated by contrast with that of a similar phenomenon observed earlier in pregnancy among mothers of monoglot babies. Sublethal anoxia is hypothesized as a principal agent in the production of encephalo-ophthalmic dysplasia, because of the relationships to placenta previa, antepartum hemorrhage and eclampsia.

ABSTRACT OF DISCUSSION

DR. WILLIAM C. OWENS, Baltimore: Dr. Ingalls emphasized the association of retrolental fibroplasia with prematurity. I am in complete agreement with this observation. In my experience the disease has developed in premature infants. I encountered the greatest incidence in premature infants weighing 3 pounds (1,361 Gm.) or less at birth. Dr. Ingalls has suggested that antenatal anoxia, resulting from an abnormal placental environment associated with multiple pregnancy, placental hemorrhage or toxemia of pregnancy, may be a causative factor in the disease. However, as Dr. Ingalls stated, these abnormal conditions are "... the usual precursors of prematurity itself, and their over-all significance in relation to encephalo-ophthalmic dysplasia awaits further study." Since retrolental fibroplasia occurs principally, if not entirely, in premature infants, the higher incidence of these factors in cases of the disease may be related to the prematurity alone and not specifically to the occurrence of retrolental fibroplasia. The incidence of these abnormalities of the placental environment in the cases of retrolental fibroplasia shown by Dr. Ingalls in table 1 is not greater than the incidence of these factors in cases of prematurity as a whole, as reported by Anderson and Lyon, and by Eastman. Therefore it is not clear whether the postulated causative factors are not related generally to prematurity rather than specifically to retrolental fibroplasia. My observations on the clinical course of retrolental fibroplasia do not lend support to Dr. Ingalls' postulate as to the significance of the persistence of the hyaloid system. For the past three years, Dr. Ella Uhler Owens and I have been routinely examining the eyes of the infants in the premature nursery of the Johns Hopkins Hospital. We have observed the onset, course and development of the final picture of retrolental fibroplasia. None of the infants had retrolental fibroplasia at birth. The disease was not related to persistence of the hyaloid system. Early postnatal examinations of the eyes revealed normal fundi. The earliest change observed was progressive angiomatous dilatation of the retinal vessels, followed by the development of extensive grayish retinal edema and detachment. The vitreous became cloudy. The retrolental membrane was formed by the extension across the retrolental space of fusing peripheral portions of the swollen grayish retinal detachments. The vessels in the retrolental membrane had their origin from retinal vessels and not from vessels associated with the embryonic vascular sheath of the lens. In most cases the active stage of the disease subsided gradually. In some eyes the activity subsided before a complete membrane was formed behind the lens. Usually bands simulating retinal folds extended through the vitreous to localized areas of retinal detachment. New-formed vessels arising from the retina were visible in the folds.

DR. EVERETT KINSEY, Boston: Dr. Ingalls' interesting paper on the epidemiologic aspect of encephalo-ophthalmic dysplasia has been concerned chiefly with the possible causation of the ophthalmic dysplasia, rather than with that of any accompanying mental disorder. We, at the Massachusetts Eye and Ear Infirmary, prefer to call the disease retrolental fibroplasia, because we believe that there is insufficient evidence, in our cases at least, of mental retardation to justify the name encephalo-ophthalmic dysplasia. For instance, in 150 cases which are being followed up currently, in less than 20 per cent are there signs of mental disorder. To be sure, further psychological studies are necessary in borderline cases before a final evaluation can be made. Therefore, I shall use the term retrolental fibroplasia in this discussion. Dr. Ingalls has pointed to the possible importance of the prenatal environment in the production of retrolental fibroplasia, as exemplified by the high rates in multiple births, toxemia of pregnancy, placental diseases or hemorrhages among mothers of babies who subsequently have this condition. He calls attention further to the etiologic relations between disease of the mother and disease in the child, as indicated by the occurrence of hemorrhages during the sixth, seventh and eighth months of gestation. There are two points I would like to make in this connection. First, such factors as multiple births and placental diseases are in themselves frequent causes of prematurity. Since the incidence

17. Vital Statistics of the United States, United States Department of Commerce, Bureau of the Census, 1944.

18. Newman, H. H.: Multiple Human Births: Twins, Triplets, Quadruplets and Quintuplets, American Association for the Advancement of Science Series, New York, Doubleday, Doran & Company, Inc., 1940.

of retrolental fibroplasia is highest among infants born prematurely, it follows that the reasoning employed by Dr. Ingalls would apply equally well to any condition of the mother which is associated with premature birth. To draw any deductions concerning causation from this kind of information, one must be certain that the incidence of the disease in infants premature because of multiple birth, for instance, is significantly different from the incidence in infants born prematurely as a result of some other condition, e. g., spontaneous delivery. Dr. Ingalls pointed out that a conservative estimate of the incidence of retrolental fibroplasia at the Boston Lying-In Hospital was 15 per cent, in babies weighing less than 4 pounds (1,814 Gm.) at birth. Percentage incidence figures are always subject to variation, depending on methods used in calculating them. A detailed study of the incidence of this disease from the same hospital by our group would suggest that this figure is low.

DR. INGALLS, Boston: A congenital origin is established when the ocular disease is observed at birth or in the immediate neonatal period. Such babies who show the congenital disease are usually those born at term. The ratio of premature to term births, about 1 to 7 when the condition was recognized during the first month of life, showed a complete reversal after the third month to about 18 to 1. The differences may be explained in Terry's observation, confirmed by the testimony of those who spoke today, that it takes considerable time for some of these ocular changes to take place. If several months are required for the retrolental membrane to manifest itself, then the low incidence of ocular lesions in premature infants and the high incidence among full term infants suggest that

the causative agent acts generally about the time the premature group is born and, therefore, well before birth for the term group. To determine the significance of antenatal hemorrhages, it was said that more data are needed on antenatal hemorrhages among premature babies who did not have encephalo-ophthalmic dysplasia for comparison with hemorrhages in babies in whom it did develop. That is true, but, to produce a fourfold table, four types of data are really needed: antenatal hemorrhage followed by ocular disease, antenatal hemorrhage not followed by ocular disease, no antenatal hemorrhage followed by ocular disease and no antenatal hemorrhage not followed by ocular disease. The results could be submitted to a chi square test, which, however, is only one method of determining significance. Another method was used in this present study, based on the time at which antenatal hemorrhages occurred among mothers of babies in whom encephalo-ophthalmic dysplasia developed, as compared with the time of antenatal hemorrhages among mothers with babies having mongolism. If the time of bleeding bore no relation to disease of the baby, the hemorrhages would expectedly occur at random. They did not.

As for the term "encephalo-ophthalmic dysplasia," I have borrowed it from Krause of Chicago. It seems to me that he has made a real contribution by drawing attention to the necessity for study of the whole child. A good example was also set by Reese and Payne, who found a significant association (about 15 per cent) of the condition with hemangiomata. Likewise, a 20 per cent association of any condition with mental retardation is probably significant. It certainly makes it worth while to study the whole child.

GENERAL PRACTITIONERS SESSION

TUMORS OF THE NECK

FRANK H. LAHEY, M.D.
Boston

Tumors of the neck are important to discuss because they are not uncommon. Because of the fact that malignancy is not rare in them it is important to determine their character as early as possible; the need to know their origin and character is not far removed from that of tumors of the breast. Exclusive of the lipomas of the neck, which can occur anywhere in the neck and can usually be diagnosed by their consistency and demonstrable lobulation, there are almost no tumors of the neck which should not either be promptly biopsied or removed after discovery. I know of no other tumor than lipoma which can make one blush more for having forgotten it in considering the diagnostic possibilities in superficial tumors.

The diagnosis of tumors of the neck can be extremely simple or so obscure as to make their final diagnosis possible only by exploration and biopsy, and since many of the malignant tumors of the neck will prove to be radiosensitive lymphomas, microscopic demonstration of this character should not be delayed. Dr. Hugh F. Hare, head of the Department of Radiology, The Lahey Clinic, has recently demonstrated¹ that of 181 patients proved to have lymphomas and regularly treated with roentgen rays, 29 per cent are alive and well over five years without recurrence, a point of no small importance in the early detection and treatment of these tumors.

To make the discussion of tumors of the neck orderly, my associates and I have always classified them into midline tumors and cysts, practically all occurring as single tumors, laterally located tumors and single and multiple tumors (table 1).

These are the common tumors with which my associates and I have had to deal. I have omitted consideration of those conditions related to trauma, the extremely rare air cyst which the patient can blow up at will, pneumatocele, of which we have had 1 case, large esophageal diverticular sacs, which the patients can fill and demonstrate (rare), and the acute inflammatory lesions, such as deep cervical abscesses. Ludwig's angina and also the uncommon gummatous masses in the neck.

Midline tumors and cysts can be disposed of without too much discussion, since, except for the occasional inflammatory submental mass and dermoid, they are related either to the thyroid itself or to the developmental descent of this gland from the back of the tongue to its normal place on the upper tracheal rings.

Of the midline cysts and tumors the most dramatic as well as the rarest is the lingual thyroid and the commonest is the thyroglossal cyst. Each is the result of developmental failure, in the lingual thyroid the failure of the thyroid to descend and in the thyroglossal cyst the failure of the thyroglossal tract to close.

Lingual thyroids are supra, intra and infra in location in relation to the back of the tongue, at which point their origin is represented by the foramen caecum. We have had three of these unusual tumors, one supra-lingual and two intralingual thyroids, but no infra-lingual thyroids.

There is little to be said about the diagnosis of these tumors, since their consistent location always at the same point on the back of the tongue marks them as lingual goiters. There would be no excuse for including these rare tumors in a discussion of tumors of the neck if it were not for the fact that, as shown in figures 1 and 2, they show themselves as tumors of the neck by roentgenologic examination and as such must be considered in the diagnosis of tumors of the neck. They force themselves on the patient's attention by their gradual enlargement, finally, to the degree

Read before the interim meeting of the American Medical Association, Cleveland, Jan. 8, 1948.

1. Hare, H. F.; Mulry, W. C., and Sornberger, C. F.: Lymphoid Tumors, Radiology, 50: 506-514 (April) 1948.

that they interfere with food intake and so demand the consideration of their removal.

There are only two points to be mentioned in relation to the removal of lingual goiters. Lingual goiter usually represents all of the thyroid tissue which the patient has. Before its removal is undertaken, the surgeon will save himself embarrassment and possible criticism by explaining this to the patient and his family and informing them that following the operation it will be necessary for the patient to take thyroid the rest of his life.

Because of the location of the lingual goiter on the back of the tongue and possible apprehension of one's ability to control the bleeding expected to occur with such a vascular tumor as a thyroid tumor is known to be, and in such an inaccessible location, the operative approach to such a tumor could be selected as through

TABLE 1.—Classification of Tumors of the Neck

Lingual goiter
Supra
Intra
Infra
Thyroglossal cysts
Pyramidal lobe
Hyperplastic
Aberrant thyroid tissue along this midline tract
Adenoma of isthmus
Medial dermoids
Lateral tumors—discrete
Inflammatory salivary gland swelling with stone
Mixed tumors of the submaxillary gland
Carotid body tumors
Branchial cysts
Neurofibromas
Discrete parathyroid cancer
Discrete aberrant thyroids
Discrete Hodgkin's disease
Discrete lymphosarcoma
Discrete primary carcinoma of neck (branchial tract origin)
Discrete tuberculous cervical nodes
Discrete adenomas of the thyroid
Lipomas
Lateral dermoid cysts
Lateral multiple tumors
Hodgkin's disease
Tuberculous cervical glands (multiple)
Multiple aberrant thyroids
Multiple colloid adenomatous goiter
Hygromas of neck
Low tumors of neck extending into mediastinum
Intrathoracic goiter
Fibromas of esophagus
Virchow's glands
Cancer secondary to carcinoma of stomach
Cancer secondary to carcinoma of lung

the neck, beneath the chin and through the tongue. We have had no experience with infralingual goiters of this type in which this approach might be considered but for intralingual and supralingual goiter, the approach through the mouth will prove simple and in no way troublesome. With traction stitches on the lateral aspects of the back portion of the tongue, with an intratracheal tube in place and with the pharynx packed to prevent blood from being sucked into the lungs, these tumors can be removed through the mouth and the bleeding from them controlled without any great difficulty.

The two types of swellings in the neck related to the thyroglossal tract are the pyramidal thyroid lobe (fig. 3) and the thyroglossal cyst (fig. 4).

The pyramidal lobe of the thyroid, located as it most often is just to the left of the thyroid cartilage and, when completely developed, extending from the thyroid isthmus to the hyoid bone, will interest us as a tumor of the neck only as it occurs in patients who have had

subtotal thyroidectomies performed for exophthalmic goiter in the course of which operations the pyramidal lobe of the thyroid has not been removed. Every one who has had any considerable experience with the surgical treatment of hyperthyroidism has many times

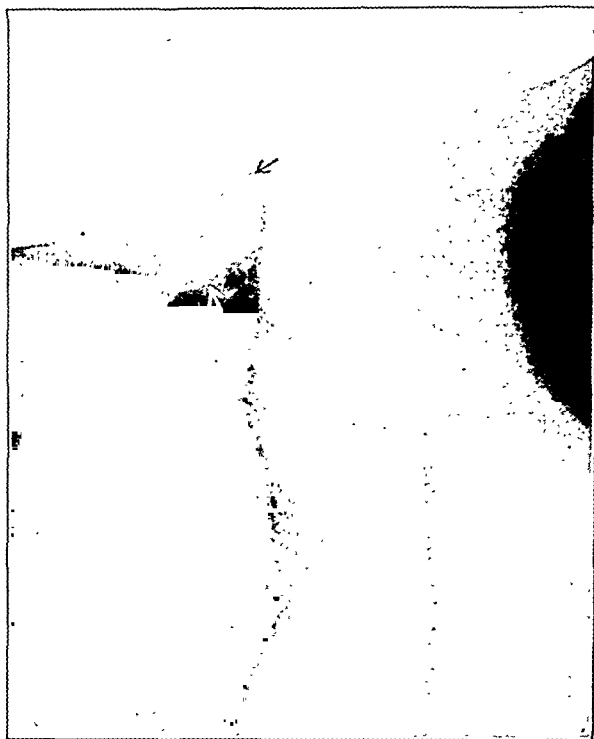


Fig. 1.—This illustration shows definitely the shadow of an intra-lingual thyroid (from S. Clin. North America, p. 487, June 1947).

seen the small pyramidal lobe of the thyroid overlooked in the thyroidectomy and not removed. When this pyramidal lobe, preoperatively so insignificant, is not removed in the subtotal thyroidectomy for active hyperthyroidism, it can so enlarge postoperatively from hyperplasia that it can be seen and felt as an unsightly finger-like tumor mass extending from the level of the

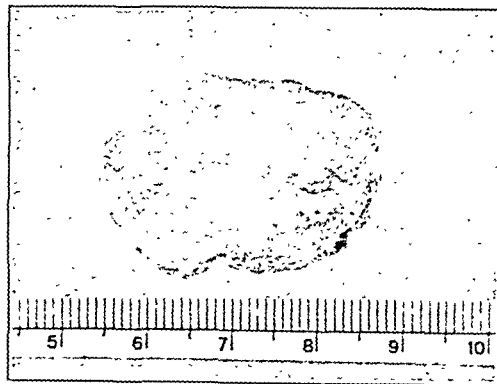


Fig. 2.—This illustration shows the specimen of the intralingual thyroid removed (from S. Clin. North America, p. 487, June 1947).

thyroid isthmus to the level of the hyoid bone and resting on the left plate of the thyroid cartilage. One cannot fail to recognize enlarged pyramidal lobes of the thyroid, because of their location and because of their firmness due to the hyperplasia and tissue regeneration

in them, as the thyroid still attempts in the remaining thyroid tissue to respond to the continuing influence of the pituitary-stimulating thyroid hormone.

These tumors are often extremely disfiguring, standing out as they often do on the neck as unsightly sausage-like longitudinally placed tumors. They are

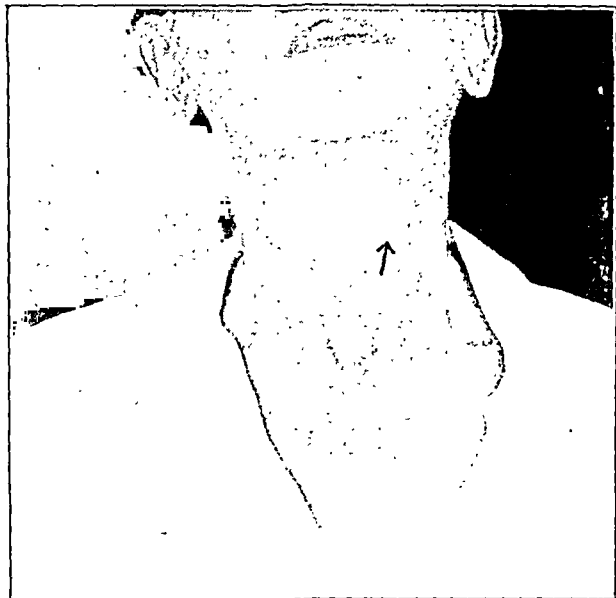


Fig. 3.—In this illustration of recurrent hyperthyroidism (showing the scar of the previous operation), in the midline is shown a remnant which represents hyperplasia in an unremoved pyramidal lobe.

easily removed by reelevating the cutaneous flap, and in their removal it is unnecessary to remove central sections of the hyoid bone and follow them up to the base of the tongue, as is necessary in the removal of thyroglossal cysts and tracts.

Since the thyroglossal tract, representing the embryologic remnant of the fetal thyroglossal duct, extends from the isthmus of the thyroid to the foramen caecum

However, the most consistent location at which these cysts occur is slightly to the left of the midline and opposite the notch in the thyroid cartilage. They are commonest in children, but can and do delay their appearance until adult life. They have often spontaneously ruptured or have been incised after infection of the cyst (fig. 5).

We have now operated on three hundred and nineteen of these cysts and have learned, as has every one dealing with them surgically, that, if one wishes to avoid recurrences following their removal, not only must the cyst be removed but the central section of the hyoid bone must also be removed and any continuation of the thyroglossal tract followed up to the base of the tongue and removed also. This radical removal, first proposed by Sistrunk,² has never failed to remove the tract entirely and result in permanent relief of the condition in my experience. There is only one warning to be uttered in connection with this operation, and one I would not feel necessary to mention if I had not seen the unsightly results of its employment, that is that never should the incision for the excision of thyroglossal cysts be made in the longitudinal direction, but always in the transverse direction. If made in the longitudinal direction it will result in a checkrein-like scar, which is almost impossible to overcome except by means of a free graft.

TABLE 2.—Lateral Discrete Tumors of the Neck

Inflammatory salivary gland swelling with stone in the submaxillary duct
Mixed tumors of the submaxillary gland
Carotid body tumors
Branchial cysts
Neurofibromas
Discrete parathyroid malignant condition
Discrete aberrant thyroids
Discrete Hodgkin's disease
Discrete lymphosarcoma
Discrete primary carcinoma of the neck (branchial tract origin)
Discrete tuberculous cervical nodes
Discrete adenomas of the thyroid
Lipomas
Lateral dermoid cysts

Single discrete adenomas of the thyroid can occur at any level of the thyroglossal tract, but are almost never seen outside the lateral lobes or isthmus of the thyroid gland. They are not uncommon in the isthmus of the thyroid, but are usually small here, since if they attain any size they must encroach on the lateral lobes and occupy that portion of the thyroid gland.

In discussing the diagnosis of discrete lateral tumors of the neck, I would like to state, as a result of my own considerable experiences with them, that it is impossible in most of these cases to do more than state one's suspicion of what the tumor will prove to be, setting down the different types of tumors and cysts that need to be considered. No one who has had much experience with removing tumors of the neck can deny that what was thought might prove to be a tense branchial cyst has turned out to be a carotid body tumor; what was thought might be a carotid body tumor has turned out to be a discrete malignant growth of parathyroid origin, a discrete lateral aberrant thyroid mass or, for that matter, any one of the discrete laterally located tumors of the neck with the exception of discrete adenomas of the thyroid and dermoid cysts included in this list.

2. Sistrunk, W. E.: Technique of Removal of Cysts and Sinuses of the Thyroglossal Duct, *Surg., Gynec. & Obst.* 46:109-112 (Jan.) 1928.



Fig. 4.—This is a typical thyroglossal cyst. Although it appears to be in the midline, it actually is just to the left of the notch in the thyroid cartilage (from S. Clin. North America, p. 488, June 1947).

on the back of the tongue at the junction point made by the circumvallate papillae, one may observe a thyroglossal cyst at any level between these two points, in the floor of the mouth at the level of the notch in the thyroid cartilage or at the level of the thyroid isthmus.

In discussing the diagnosis of the discrete laterally located tumors of the neck, one can only suggest the features frequently observed in connection with them and at the same time admit that, in spite of this, surprises will occur when the tumors are exposed and removed and the pathologic report returned.

An enlarged salivary gland, usually secondary to a calculus within the salivary duct, is not difficult to distinguish, particularly because, with one finger in the mouth and the other over the region of the salivary gland, its location beneath the angle of the jaw, characteristic shape, the history of change in size and the presence of a calculus demonstrable by the roentgenogram or palpable through the floor of the mouth will generally make it possible to be rather certain of the diagnosis.

When chronic enlargement of one salivary gland has existed over a considerable period of time as the result of the presence of a salivary calculus, the stone may usually be excised through the mouth from its position in the submaxillary duct beneath the mucous membrane. If this does not immediately result in diminution and disappearance of the submaxillary swelling, the entire gland should be removed externally.

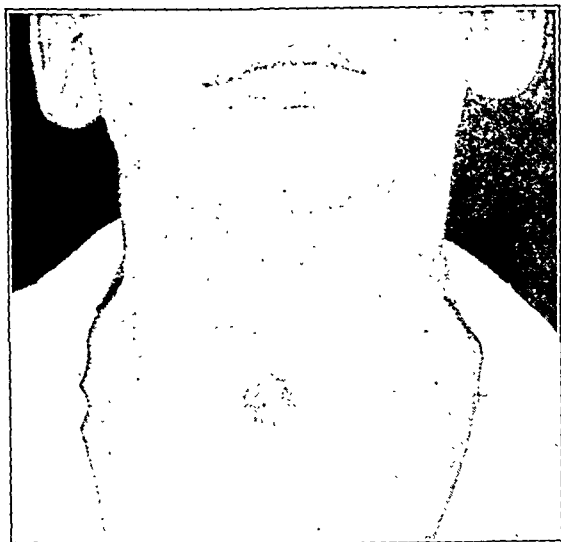


Fig. 5.—This illustration shows a thyroglossal cyst which has ruptured and drained, with the granulation at the point of draining. The lower level in the midline of this thyroglossal cyst as compared with the more common level near the notch of the thyroid cartilage may be seen (from *S. Clin. North America*, p. 489, June 1947).

Mixed tumors originating in the salivary gland are likewise rather readily diagnosed, because of the fact that they can be similarly palpated as arising in the submaxillary gland by combining external palpation with internal palpation by means of a finger in the mouth.

Two of the tumors of the neck which will not infrequently require differentiation are carotid body tumors (figs. 6 and 7) and branchial cysts (figs. 8 and 9). They are frequently located at about the same level. Branchial cysts are often so tensely filled with fluid that their consistency deceives one into thinking that they are tumors, and the differential diagnosis between the two types of tumors is not easy.

There are certain features of each, however, which will aid one in at least being reasonably suspicious of the diagnosis. It is to be recalled that the course of a branchial sinus, from which a branchial cyst arises

(fig. 10), is from a point just in front of either sternomastoid upward beneath the skin, beneath the belly of the digastric muscle to enter the pharynx at the region of the tonsil. Unlike carotid body tumors, the course of a branchial sinus is extremely superficial, directly beneath the skin, until it reaches the level at which it



Fig. 6.—This illustration shows a carotid body tumor, with its tendency to extend beneath the angle of the jaw and to grow inward and not outward as seen in the illustration of the branchial sinus (from *S. Clin. North America*, p. 494, June 1947).

passes beneath the belly of the digastric muscle. It is obvious, then, that the tendency of thyroglossal cysts will be to enlarge outward, in contradistinction to that of carotid body tumors to enlarge inward, arising as they do, deeply in the neck, and situated as they are, at the notch made by the external and internal carotids.

Rarely do branchial cysts extend under the angle of the jaw as do carotid body tumors. Because of their superficial location, branchial cysts are movable, and whether or not they are cysts can be determined by the exploratory introduction of a small caliber needle.



Fig. 7.—This also is a carotid body tumor and has the same characteristics, inward growth, as shown in figure 6.

Branchial cysts, as shown in figure 11, can attain large dimensions; they are often rather disfiguring and, of course, because of their epithelial elements, possess always the danger of malignant degeneration, although the percentage of malignant conditions in branchial cysts is relatively low. Since they are superficially

located, their removal is not difficult or dangerous and, with good exposure and dry fields, can be accomplished successfully with relatively little danger to any important structures except the large vessels, the hypoglossal nerve and, at times, the spinal accessory nerves.

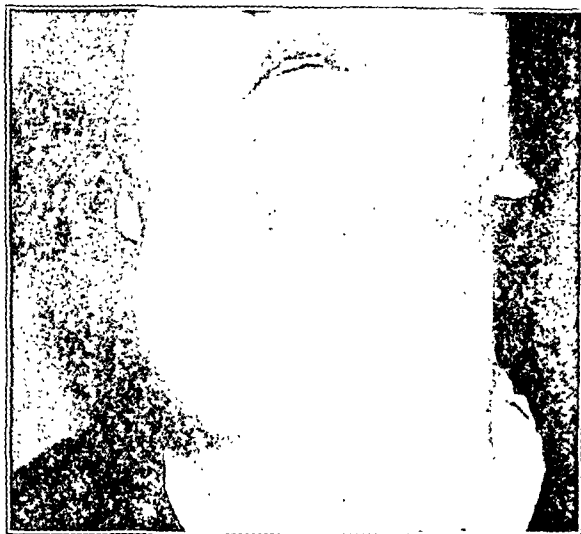


Fig. 8.—This is a photograph of a patient with a branchial cyst, showing the tendency of this type of tumor, as discussed in the text, because of its superficial location, to grow outward and downward (from *S. Clin. North America*, p. 491, June 1947).

Carotid body tumors are not common tumors. In a recent article reporting our experiences with eighteen carotid body tumors,³ Warren and I reported that we had found that only three hundred carotid body tumors had been reported in the literature.

Carotid body tumors, arising as they do from the carotid gland in the notch made by the junction of the external and the internal carotids, are as stated, deeply located tumors. Unlike branchial cysts, carotid body tumors enlarge not outward but inward and upward.

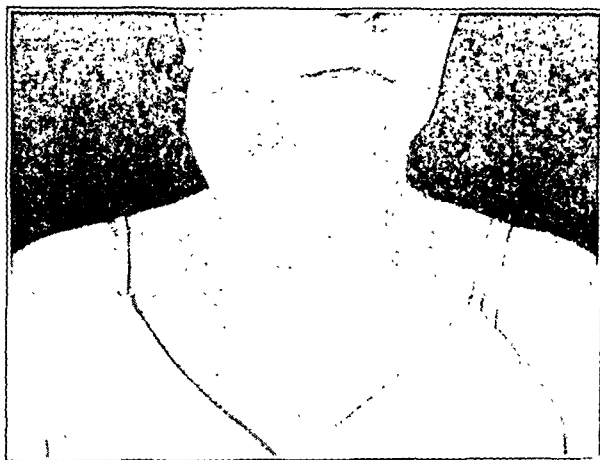


Fig. 9.—This also is a photograph of a patient with a branchial cyst, showing in this case that the distinguishing feature of external enlargement is not as apparent as in figure 8, again demonstrating that, regardless of the distinguishing features of tumors of the neck, differentiation of them will often be difficult.

They are characterized not only by their deep location but by extending upward toward the base of the skull behind the angle of the jaw, and, while, as shown in figure 12, they do produce a swelling on the neck, the

greater part of the enlargement is not outward. In the aforementioned article on carotid body tumors, attention is called to a feature of carotid body tumors which frequently may not be appreciated unless one has had some experience with them; that is, the tendency of certain carotid body tumors to bulge into the pharynx to such a degree that they can interfere with swallowing. In 2 of the patients on whom we operated for carotid body tumors, such was the intrapharyngeal bulging as the result of the pressure of these tumors that their removal became an urgent necessity, because of the fact that the patients were unable to swallow an adequate amount of food.

Another feature to be remembered in carotid body tumors is the fact that, unlike other tumors of the neck, they cannot be dislocated downward. Since they arise in the carotid notch, it becomes obvious that they cannot be made to move downward by pressure. Still another diagnostic point in carotid body tumors



Fig. 10.—This photograph of a branchial sinus injected with iodized poppy seed oil is shown to demonstrate the course of the branchial tract and its superficial location. This was a complete branchial sinus in which the injection could be done from the point of exit in front of the sternomastoid to the point of entrance into the pharynx.

is that their deep origin just beneath the mucous membrane of the pharynx can frequently be demonstrated by bimanual palpation, with two fingers, one finger in the mouth, pressing on the side of the pharynx, and the other on the neck, beneath the angle of the jaw. One can also not infrequently determine the origin of these tumors when they are palpated bimanually by demonstrating the relationship of the tumor to the bimanually palpated common, external and internal carotid vessels.

The percentage of malignant conditions occurring in carotid body tumors has been placed at various levels by various authors, ranging from 20 to as high as 50 per cent. In the series of 18 cases recently reported by Warren and me there were no malignant conditions, and since that time two additional carotid body tumors

3. Lahey, F. H., and Warren, K. W.: Tumors of the Carotid Body, *Surg., Gynec. & Obst.* 85:281-288 (Sept.) 1947.

have been removed in which there were no malignant conditions.

Because carotid body tumors tend to enlarge and may ultimately require removal because of pressure, because in a definite percentage, even if they are small, malignant degeneration will occur, it is my opinion that all carotid body tumors should be excised if possible. When, however, the carotid body tumor surrounds all three vessels, as shown in figure 13, necessitating the ligation of all three vessels for its removal, I do not believe that its removal is justifiable. In my hands, the mortality of this procedure has been 33 per cent, which I believe is higher than the incidence of malignant degeneration. In the cases in which ligation of all three vessels is necessary I believe that the tumor should not be removed. When, however, malignant degeneration has been demonstrated or when the size of the tumor and its pressure on the pharynx with its increased size are such as to interfere with swallowing and when, in addition, it becomes evident that the tumor can be removed only by the ligation of all three vessels, I believe that a preliminary low ligation of the common carotid by the infolding plan devised and practiced by Dr. James L. Poppen in the

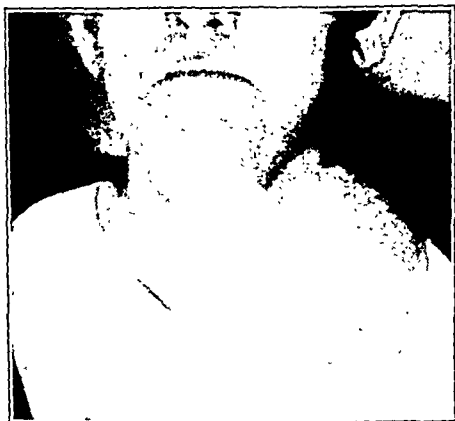


Fig. 11.—This is a photograph of a large branchial cyst extending down toward the shoulder. This is of unusual size and of unusual location.

Neurosurgical Department of the clinic, in the management of intracranial aneurysms, is the plan to be employed (fig. 14). With the common carotid infolded and ligated for six weeks, particularly when afterward heparinization is done to avoid thrombosis, later removal with ligation of the external and internal carotids will prove distinctly less hazardous.

Lateral aberrant thyroid tissue,⁴ arising from the ultimobranchial bodies, as shown diagrammatically in figure 15, can be made up of multiple nodules or of a single discrete nodule, as shown in figure 16. One must have in mind that any laterally located solid discrete tumor of the neck can, on microscopic examination, prove to be a lateral aberrant thyroid, either benign or malignant. If a laterally located single tumor of the neck proves to be an aberrant thyroid, the remainder of the neck should be carefully searched for other small aberrant thyroid tissues and removed by radical complete dissection. If the discrete lateral aberrant thyroid tumor proves to be malignant papillary adenocarcinoma, a radical dissection of the neck on that side should be carried out.

Neurofibromas of the neck, as shown in figure 17, can occur at any level and at any location on the neck and can arise from any of the nerves in the neck. In figure 18 is shown one which occurred beside the pharynx, and in it the deviation of the esophagus filled



Fig. 12.—This is still another photograph of a carotid body tumor, to indicate that even though the carotid body tumor may be at a location lower than the angle of the jaw, due to the fact that the carotid notch is lower, the tendency of the tumor is still to project inward and not to enlarge outward as do most of the branchial cysts.

with barium sulfate can be seen. They are discrete and firm, and the final diagnosis in these tumors can be made only with a pathologic report. They are of a low grade of malignancy; they tend to recur locally

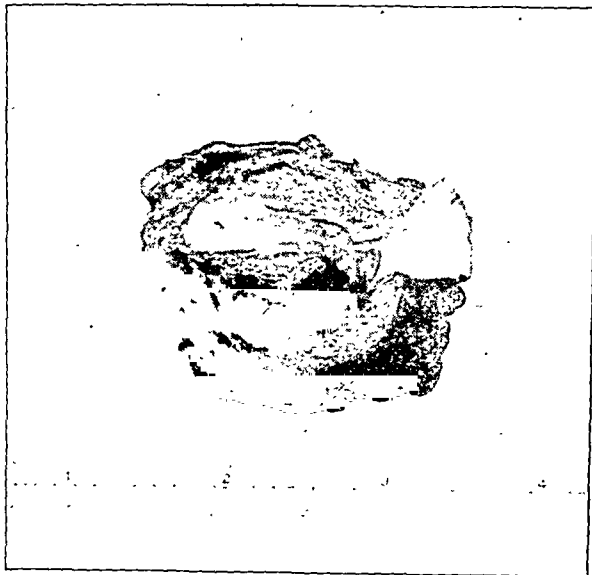


Fig. 13.—In this photograph of a removed carotid body tumor, it can be seen that the tumor had surrounded all three branches of the carotid, the common, the external and the internal, so that they were enveloped and removal required ligation of all three vessels. This ligation of all three vessels in my actual experience has resulted in a mortality of 33 per cent and in my opinion should never be done. It is in enveloping carotid body tumors such as shown in this illustration that removal is not advised.

and should be removed radically, and one should take care that they are removed completely and intact.

4. Lahey, F. H., and Ficarra, B. J.: *The Lateral Aberrant Thyroid*, Surg., Gynec. & Obst. 82:705-711 (June) 1946

Three types of tumors have occurred, in my experience, of parathyroid origin—parathyroid cysts, parathyroid adenomas and discrete lateral malignant growth of parathyroid origin. Parathyroid cysts have been seen up to the size of a horse chestnut and parathyroid adenomas, likewise, up to the size of the horse chestnut.

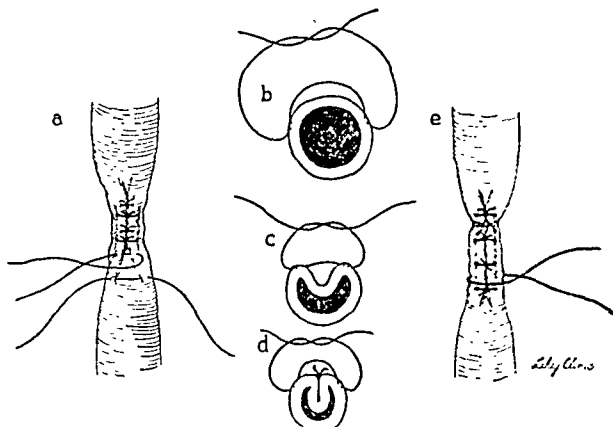


Fig. 14.—In this illustration (supplied by Dr. James L. Poppen of the Neurosurgical Department of the Clinic) is demonstrated the method of infolding the common carotid vessel and then ligature to avoid (1) cutting of the ligature and (2) the production of thrombosis. This is the method that Dr. Poppen has employed in dealing with carotid ligation in intracranial aneurysms.

Parathyroid cysts and parathyroid adenomas have occurred in direct relationship to the thyroid gland and have been seen located posterior to it. The rare malignant growths of the neck of parathyroid origin which

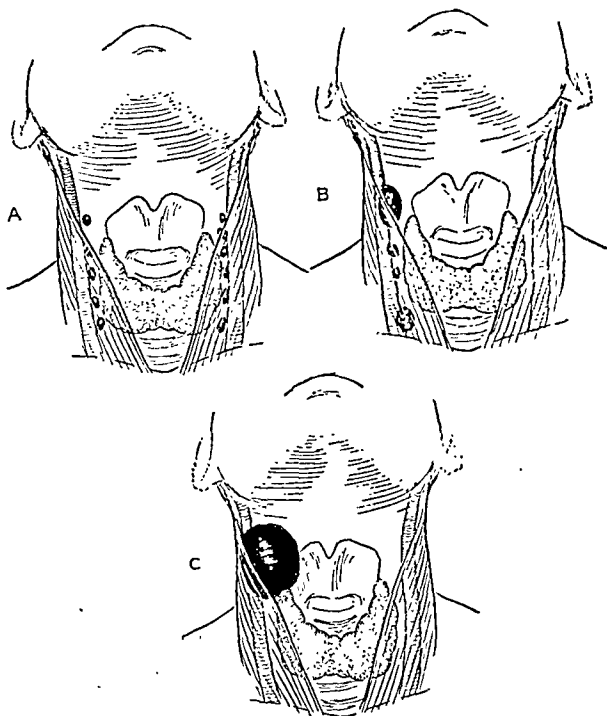


Fig. 15.—In this illustration (A, B and C) are shown the three types of aberrant thyroid which I have found in a series of 47 patients with this lesion on whom I operated and reported in an article on this subject. In C is shown the typical discrete tumor of aberrant thyroid origin.

I have seen have been of considerable size and not related to the thyroid itself. They have been discrete laterally located movable tumors of the neck, and the diagnosis has been made in every case only with the pathologic report.

Lymphosarcoma has occurred, in my experience with tumors of the neck, as a discrete tumor and as Hodgkin's disease. Discrete primary carcinoma of the neck arising in the branchial tract has likewise occurred in my experience, and all of these tumors have been diagnosed solely on the basis of the pathologist's report.

Discrete tuberculous cervical nodes have occurred in my experience, but much less commonly than in the past, when this disease was particularly common in children, prior to almost routine tonsillectomy in children and prior to inspection of milk herds for tuberculosis. Tuberculous adenitis of the cervical nodes most commonly occurs in the region drained by the tonsils. The nodes most commonly involved discretely are those just below the angle of the jaw and in front, beneath or behind the sternomastoid muscle. While tuberculous cervical adenitis can occur as a discretely involved gland, it does not usually occur in a single gland. The diagnostic feature which will be helpful in one's sus-

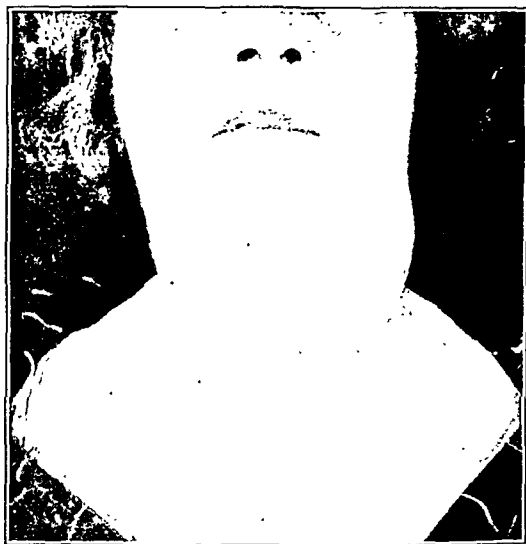


Fig. 16.—This is a single discrete tumor of the neck, of lateral aberrant thyroid origin with carcinomatous degeneration. In comparing this photograph with one of a patient with a branchial cyst one can easily see how difficult it is to differentiate some of the tumors of the neck (from S. Clin North America, p. 493, June 1947).

picion of the diagnosis is the fact that in any tuberculous gland which has reached the size of a horse chestnut rarely will caseation be absent. In the presence of caseation rarely will calcium deposits be absent which can be demonstrated by the roentgenogram, and this suggests the diagnosis of tuberculous lymph node.

If a tuberculous node of the neck does occur as a discrete involvement of a single node or set of nodes, excision followed by radiation is a most satisfactory form of treatment. It is to be recalled, however, that the spinal accessory nerve passes beneath the sternomastoid at this point where discrete tuberculous glands of the neck are so likely to occur, that is, behind the middle portion of the sternomastoid muscle, and that, in dissection of the tuberculous node here, this nerve is in danger. It is to be recalled also that the spinal accessory nerve innervates the trapezius, which by scapular rotation provides the last 90 degrees of abduction of the arm, and that injury to it results in serious loss of motion and function of the arm.

Discrete adenomas of the thyroid should never be difficult to diagnose, since, with few exceptions, that is,

those adenomas extruded from the thyroid, the discrete tumor can be palpated as arising in one of the lobes of the thyroid. There is one distinguishing characteristic of a tumor, discrete or multiple, arising in the thyroid gland, and that is the fact that it ascends and descends with swallowing. The only other tumor occurring at this location that I know of which ascends and descends with swallowing is the fibroma of the esophagus.

Discrete adenomas of the thyroid with their relationship to thyroid malignancy (table 3), in my opinion, should all be removed, since the mortality in removal of these tumors should be zero.

It is to be recalled that inclusion cysts of the neck (dermoid cysts) can occur at any level (figs. 19 and 20), from the back of the tongue to the level of the clavicle.

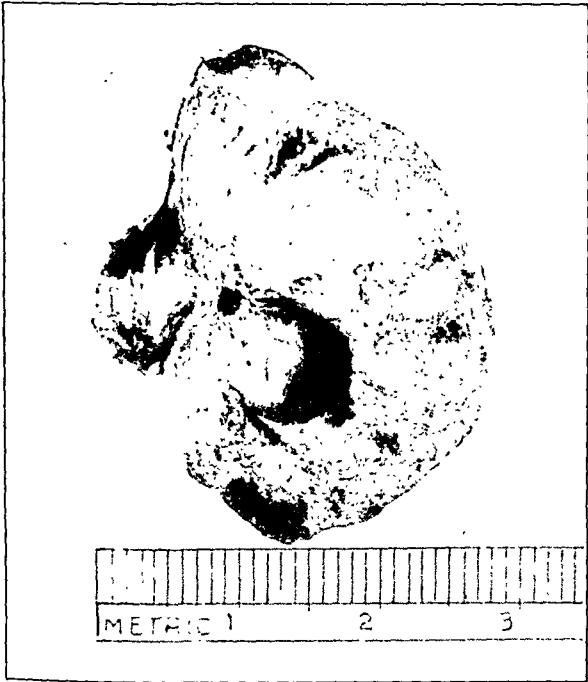


Fig. 17.—A neurofibroma removed from the neck in the region of the pharynx.

TABLE 3.—Incidence of Malignancy in Thyroid Adenomas *

Year	Total Thyroid Tumors	Malignant Conditions, Percentage
1926.....	443	3.6
1927.....	501	4.0
1928.....	526	10.8
1929.....	655	7.3
1930.....	574	4.3
1931.....	504	3.5
1932.....	495	3.2
1933.....	426	3.5
1934.....	495	5.0
1935.....	433	3.5
Total.....	5,052	

* Because of the statements which are being made of late that there is little danger of malignancy in adenomas of the thyroid, its incidence over a ten year period in 5,052 cases of tumor of the thyroid is recorded.

Attention has been called to the fact that lipomas can occur in any portion of the neck, but the possibility of this diagnosis should not be forgotten in considering any tumor of the neck not of solid consistency.

The lateral multiple tumors of the neck, consisting of Hodgkin's disease, tuberculous cervical adenitis, multiple aberrant thyroid, cystic hygromas of the neck

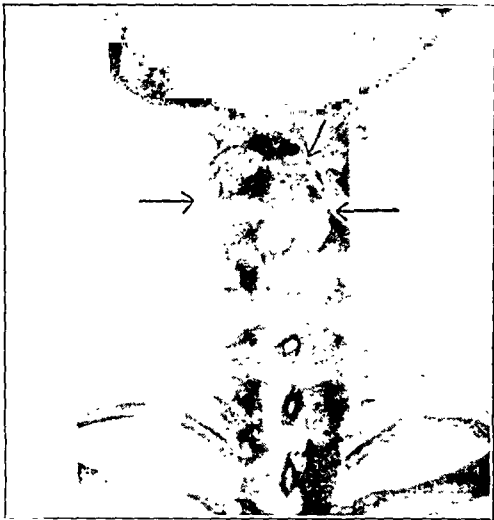


Fig. 18.—In this illustration may be seen the outline of the shadow of the neurofibroma beside the pharynx, as indicated by arrows.

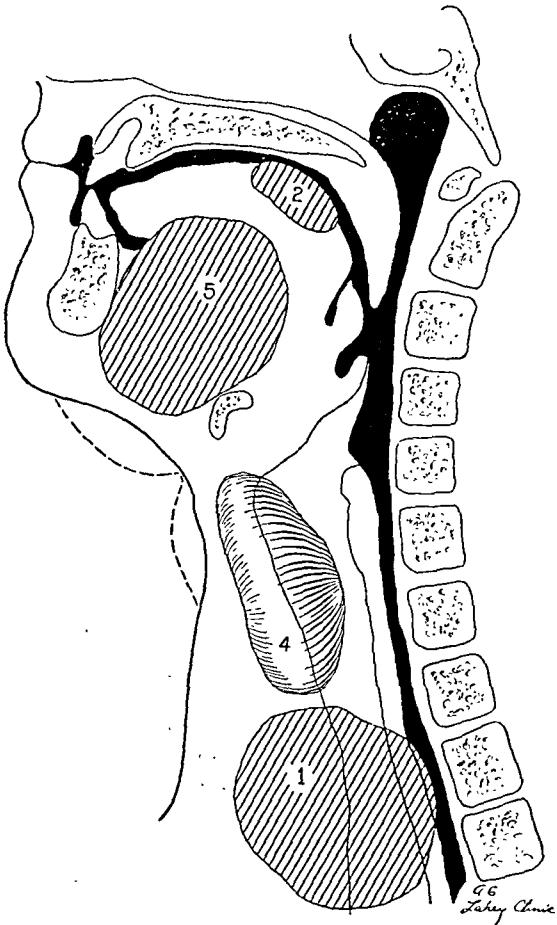


Fig. 19.—This diagrammatic illustration demonstrates the levels at which inclusion cysts (dermoids) can occur, in the back of the tongue to the level of the clavicle, in order of their frequency of occurrence in my experience.

and multiple colloid adenomatous goiters, present particularly difficult diagnostic problems.

I do not believe that it is possible to distinguish, with any definite certainty, Hodgkin's disease from tuberculous cervical adenitis by any other means than biopsy. When Hodgkin's disease occurs in multiple



Fig. 20.—A dermoid cyst in the midline beneath the jaw.

locations, one can be suspicious of it, when the character of the glands in Hodgkin's disease is typical that is, multiple movable grapelike structures without



Fig. 21.—A cystic hygroma of the neck, beneath the jaw. Again, this demonstrates how difficult it is to differentiate many of the cysts or tumors of the neck. From its location, this could easily be a tumor of the submaxillary gland (from S. Clin. North America, p. 499, June 1947).

inflammatory reaction; one may be suspicious of Hodgkin's disease, but the final differentiation between tuberculous nodes of the neck, lymphosarcoma and

the various other tumors of the neck, either single or multiple, can be made with certainty only by the removal of a node and on the basis of the pathologic report. While multiple glands of Hodgkin's disease, when it is diffuse in character, are not usually fused together, as inflammatory glands seen with tuberculous cervical adenitis often are, I have seen tuberculous cervical adenitis occur in all forms and types and have never attempted to do more than consider the possibility of both lesions and settle the final diagnosis by biopsy.

Multiple aberrant thyroids have in most instances a feature which is helpful in distinguishing them from



Fig. 22.—This is a photograph of an intrathoracic goiter, showing the extrathoracic and intrathoracic portions (from New England J. Med., 236:60 [Jan. 9] 1947).

other multiple glandlike tumors of the neck; that is, they tend to occur as a lateral chain running longitudinally up and down in front of the sternomastoid, in close relationship to the internal left jugular vein. They may occur as a small discrete chain of glandlike structures; they may occur as a chain of small glandlike structures with an occasional large glandlike mass, or they may occur, as previously stated, as a single discrete and large lateral aberrant thyroid tumor.

Little need be said about the diagnosis of multiple colloid adenomatous goiter, since the diagnostic features which attach themselves to the discrete adenoma of the thyroid are likewise true of multiple adenomas of the

thyroid; that is, their origin within the thyroid and the fact that they ascend and descend with swallowing. These features should in practically all cases make it possible to settle when multiple tumors of the neck are multiple adenomatous goiters and to distinguish them from the other lesions producing multiple tumors, aberrant thyroid, tuberculous cervical lymph nodes, Hodgkin's disease or multiple lymphomas.

Cystic hygromas of the neck, with their diffuse character and their cystic consistency, in most instances are not difficult to diagnose (fig. 21).

In discussing tumors of the neck one should not fail to mention the differential diagnosis of the low-lying tumors of the neck, particularly those that either extend into or emerge from the supraclavicular space, the commonest of which is intrathoracic goiter. This is the type of goiter which is largely intrathoracic, with its topmost portion projecting up through the upper thoracic strait, so that it can be palpated



Fig. 23.—This roentgenogram demonstrates the deviation of the trachea which occurs with the intrathoracic goiter shown in the previous illustration, showing the deviation of the trachea to the left or to the right, which occurs in the typical adenomatous thyroid which has descended into the mediastinum (from *New England J. Med.*, 236:60 [Jan. 9] 1947).

above the clavicle in the root of the neck. Intrathoracic goiter is the commonest of all the low-lying tumors of the neck which extend into the mediastinum, and has several rather typical characteristics. Again, as is true of all tumors of the thyroid, it is the only tumor in the neck, exclusive of the fibromas of the esophagus, an example of which is shown in figure 22, which ascends and descends with swallowing. Since intrathoracic goiters are oftenest discrete adenomas of the thyroid which have descended into the mediastinum with their upper surface showing above the clavicle and arising usually in a lateral lobe, they will deviate the trachea characteristically either to the right or the left, as shown in figure 23. They are practically the only tumor in the lower part of the neck which curves the trachea symmetrically, as shown in figure 23. They have the additional feature that they are usually smooth in outline and that in a roentgeno-

gram they will usually show a shadow with a sharply demarcated outline.

Fibroma of the esophagus, which occurred in 3 patients who were operated on for its removal, as shown



Fig. 24.—This roentgenogram demonstrates a fibroma of the esophagus as brought out by barium sulfate in the esophagus, showing the intrathoracic location and how readily it can, on palpation, simulate an intrathoracic goiter, particularly when one remembers that it ascends and descends with swallowing.

in figures 24 and 25, is the only tumor of the lower part of the neck other than intrathoracic goiter which ascends and descends with swallowing. Outside of the fact that its outline frequently can be brought out when barium sulfate is ingested, showing distortion of

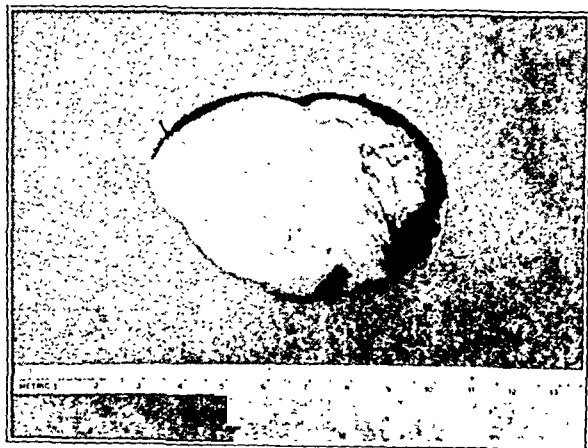


Fig. 25.—Specimen of the fibroma of the esophagus removed through the neck.

the esophagus, it is practically impossible to distinguish it by roentgenogram or by palpation from an intrathoracic goiter. There is a point which becomes valuable at the time of operative exposure, by means

of which it can be settled that this intrathoracic tumor, occurring on the lower portion of the neck, is an intrathoracic goiter or an intrathoracic fibroma of the esophagus, and that is the relationship of the recurrent laryngeal nerve and the inferior thyroid artery to the tumor. As the neck is opened and the tumor exposed, if the inferior thyroid artery and the recurrent laryngeal nerve run over the anterior surface of the intrathoracic tumor, it will be a tumor of esophageal origin and not of thyroid origin, for if the tumor be of thyroid origin the inferior thyroid artery and the recurrent laryngeal nerve, because of their developmental origin and anatomic course, will be behind the tumor. In all 3 cases of fibroma of the esophagus, the tumors were successfully removed without opening the esophagus and contaminating the mediastinum.

There occasionally arise secondary malignant growths in any location in the neck, such as discrete tumors of Virchow's gland behind the insertion of the left sternomastoid process. This has been such a classic lesion that one should never fail to remember it and to search for it in any examinations of the neck for tumors. Failure to find Virchow's glands and thus demonstrate them as secondary to carcinoma of the stomach has occurred unfortunately more than once in every one's experience and has resulted in an unnecessary exploration to determine the operability in carcinoma of the stomach when, had the gland been discovered, inoperability could have been determined and exploratory operation avoided. Virchow's glands occur as single discrete movable tumors or can have extended until they are represented by a firm fixed mass behind the insertion of the sternomastoid, with a broad fixed base and a firm apex pointing upward. At this stage, secondary extension in the region about the thoracic duct has taken place, and these can rarely be missed.

Another type of secondary malignant growth, secondary to carcinoma particularly in the upper lobe of the lung, will occasionally be observed extending above the clavicle. It is a fixed firm mass, unfortunately at times the first evidence of the presence of such a bronchiogenic carcinoma.

In discussing the diagnosis of tumors of the neck, I am aware of the fact that even after extensive experience with such tumors such discussions seem inadequate and that one can do no more than mention some of the features of these tumors which will make one suspicious of what the diagnosis may prove to be if the tumor is removed and the pathologic report received. So uncertain do I feel, both as to diagnosis and the possibility of malignancy, that in practically all patients with tumors of the neck who come to me for opinion, one of two things is usually done: A gland is removed for pathologic report, or the tumor is explored with the purpose of removing it.

SUMMARY

The importance of immediate removal of tumors of the neck and a pathologic report, because of the danger of malignancy, is stressed.

The various types of tumors of the neck, median, single, lateral, single and multiple, are listed and certain of their features discussed.

The uncertainties in determining the exact nature of all tumors of the neck, exclusive of thyroglossal cysts, adenomas of the thyroid, the neck dermoid and the cystic hygromas, are stressed, and the need for early exploration with the purpose of removal or an early biopsy in multiple tumors is strongly urged.

FUNDAMENTALS IN THE DIAGNOSIS OF JAUNDICE

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For more than two decades medical literature has been replete with publications bearing on hepatic physiology in health and disease and on laboratory methods of studying hepatic function. Much of the work has been highly specialized and of interest chiefly to investigators engaged in similar studies. The general practitioner has not found in the reports of such studies as much assistance as he might like in dealing with clinical problems of hepatic and biliary disease. In fact, he might easily be excused for pleading ignorance of the matter and leaving the study of the jaundiced patient to persons and organizations specially equipped to deal with such matters.

For several cogent reasons, however, the practitioner may be required to turn his attention again to the matter of diagnosis in the case of jaundiced persons. During the war years the most extensive epidemic of infectious jaundice on record swept across Europe, the Orient, Africa, the Pacific islands and the North American continent and left in its wake several highly important sequelae. The first obviously is the public health problem which may arise in any community in which the disease appears; the second is an increase in the number of older persons affected by the more serious and even fatal forms of hepatitis, including subacute and chronic forms of atrophy of the liver, and by such chronic lesions as the cholangiolitic or biliary types of cirrhosis. There has been an absolute increase in the various forms of atrophy of the liver observed both in this country and in Europe,² and the mortality rate of the more acute form has been distressingly high. A third problem has to do with the transmission of virus hepatitis by the use of blood, blood products, such as liquid or dried plasma, and even contaminated syringes and needles. This form of hepatitis, often designated as "homologous serum jaundice," has carried a mortality rate many times higher than that of the naturally transmitted disease and has led to a curtailment of the use of plasma in many institutions. The differentiation of these "medical" types of jaundice has become a matter of unusual importance, since surgical intervention in such cases is often attended by hepatic insufficiency and death. Finally, the war years saw the growth and development of radical surgical procedures for the relief of biliary obstruction due to carcinoma of the ampulla of Vater and the pancreas. The results to date have been most encouraging and would be even more gratifying if earlier diagnosis were possible in the patient's home environment. It is in the hope of encouraging earlier and better diagnostic studies on jaundiced patients at the time when they first come to the attention of the family physician that this article is written. The principal thesis to be developed is that it should be possible for any practitioner, by obtaining an accurate history, mak-

From the Division of Medicine, Mayo Clinic.
Read in the interim meeting of the American Medical Association, Cleveland, Jan. 8, 1948.

1. Watson, C. J.; Hoffbauer, F. W., and Howard, R. B.: The Relation of Infectious Hepatitis to Cirrhosis of the Liver, with Particular Reference to the Cholangiolitic Type (Hauot's Cirrhosis; So-Called Hypertrophic Biliary Cirrhosis), *Tr. A. Am. Physicians* 59:166-175, 1946.

2. Alstad, G.: Studies on Malignant Hepatitis, *Am. J. M. Sc.* 212: 257-267 (March) 1947; Müller, T.: Hepatitis epidemica mit hoher Letalität im Kanton Basel-Stadt im Jahre 1946, *Schweiz. med. Wchnschr.* 77: 796-802 (July 26) 1947.

ing a careful physical examination and performing a few technical procedures which do not tax the capacity of a small laboratory, to arrive at a satisfactory working diagnosis for the jaundiced patient.

The family physician has several advantages over other physicians in dealing with jaundiced patients which should not be disregarded. He knows the patient and his background, and can often evaluate the history of onset and the severity of symptoms better than a stranger. He sees the disease at its onset before it is obscured by complicating factors, and he can follow the development of physical signs and laboratory data with less inconvenience and expense to the patient. He can take comfort in the thought that many diagnoses in cases of jaundice have been made in the past on the basis of purely clinical data and that in the last analysis such clinical data plus sound judgment should always outweigh any combination of laboratory findings.

The first step in diagnosis is a tentative classification of the general type of jaundice present. Many classifications have been advanced, the most recent being that of Ducci.³ He listed three types of jaundice as follows: (1) the prehepatic, which includes the various types of hemolytic jaundice and constitutional hepatic dysfunction; (2) the intrahepatic which includes hepatocellular and hepatocanalicular forms, and (3) the posthepatic type of jaundice which includes the benign and malignant varieties of obstructive jaundice.

The hemolytic varieties of jaundice may be recognized by appropriate studies of the structure of the blood and of the products of breakdown of hemoglobin as well as by the fact that acholuria is an associated phenomenon. Evidence of serious hepatic dysfunction is usually absent. The obstructive types may be identified by the signs and symptoms of interference with biliary flow, such as colic, intermittent or permanent acholia, and by the retention in the blood of biliary constituents other than bile pigment. In obstructive jaundice there seldom is evidence of seriously disturbed metabolic function unless the jaundice is of long duration or complicated by infection of the biliary tract. Patients who have intrahepatic or hepatocellular jaundice do not present, as a rule, any evidence of long-continued interference with the flow of bile into the intestine, and, in contrast to the aforementioned types, they give early and conclusive evidence of disturbances of the metabolic functions of the liver. It is on these general diagnostic premises that a distinction sufficient for therapeutic purposes must be made.

THE HISTORY

Of the greatest importance in dealing with any jaundiced patient is a detailed and accurate chronologic history. The various points which such a history should cover will not be reviewed in detail. Particular attention, however, should be paid to three points: (1) the symptoms which either immediately or remotely preceded the onset of jaundice; (2) possible exposures to virus hepatitis, either epidemic or artificially transmitted, and to hepatotoxic agents and (3) a detailed description of any pain which the patient may have suffered before or since jaundice made its appearance. These may be considered separately.

It is unnecessary to point out that a long history of flatulent indigestion, increasing in severity, suggests the

presence of benign calculous cholecystic or inflammatory disease. It is not so well known that pancreatic cancer may begin with similar poorly defined abdominal symptoms which are often thought to be of functional origin. In fact, depressive symptoms and frank psychoneurosis may precede the onset of jaundice. In addition, there may be unexplained pruritus, loss of weight and diarrhea and, in not a few cases, an otherwise unexplained tendency to phlebothrombosis. Pain in pancreatic neoplasm lacks the clearcut and definite character of biliary colic, but may gradually develop to a disabling level.

The onset of hepatitis of the infectious type is usually abrupt, with nausea, anorexia, vomiting, fever and malaise. There are types which have at the onset symptoms which suggest the development of an infection of the upper respiratory tract; in a few cases, too, there may be fairly severe pain in the upper part of the abdomen. Among older patients, the onset of severe hepatitis may be insidious and jaundice may be the first symptom noted. In cases of acute atrophy of the liver (as was often seen in cases of homologous serum jaundice) the onset may be associated with psychiatric symptoms and organic neurologic signs, singly or in combination. Finally, the incidence of a previous jaundice is of importance; this may be a feature of the history of patients with common duct stone, but it is almost equally significant in the history of portal cirrhosis, as Howard and Watson's⁴ recent report indicates.

An inquiry into an exposure to specific hepatic poisons has always constituted an important part of taking the history of a jaundiced patient. At one time, because of the current prevalence of jaundice due to cinchophen, the first question asked of a jaundiced person was whether he had been taking any remedy for rheumatism; an affirmative answer often helped to establish the diagnosis. Inquiries into the use of other drugs were, and are now, only rarely productive. At the Mayo Clinic we are inclined today to center our inquiries on two major points: (1) the consumption of alcohol and (2) the use of blood or blood products, or even of other parenteral treatment, within two to four months of the onset of jaundice.

The hazard incidental to the transmission of hepatitis by blood and blood products has been recognized only recently, but the homologous serum forms of jaundice are of such a serious nature that this possibility must be considered for every jaundiced patient. It is not generally recognized that from 4 to 5 per cent of patients⁵ who receive pooled plasma will have virus hepatitis within two to four months. The incidence following blood transfusion is, of course, definitely less. Frequently, the incidents which have led to the giving of blood or plasma are practically forgotten by the patient in the anxiety which attends the development of a new group of symptoms. A good example of this fact was encountered recently in the case of a patient who was seen about two weeks after the onset of jaundice, which had been ushered in by pain high in the right side of the abdomen, nausea and vomiting. There was a long antecedent history of digestive complaints and a previous cholecystogram had been regarded as indicative of disease of the gallbladder.

4. Howard, R., and Watson, C. J.: Antecedent Jaundice in Cirrhosis of the Liver, *Arch. Int. Med.* **80**: 1-10 (July) 1947.

5. Report on the Incidence of Homologous Serum Jaundice Following the Use of Surplus Dried Plasma, Committee on Blood and Blood Derivatives of the Advisory Board on Health Services of the American National Red Cross, *J. A. M. A.* **135**: 714-715 (Nov. 15) 1947.

Naturally, under the circumstances, a diagnosis of stone in the common duct seemed likely. A review of the patient's history, however, made it apparent that many of her earlier digestive symptoms were due to constipation and an irritable bowel. It was learned also that about three months previously, hemorrhoidectomy had been done and that blood and plasma had been given at that time because of postoperative bleeding. This information was sufficient to halt the plans for surgical procedures and to initiate a careful study of hepatic function, which quickly established the fact that the patient was suffering from serum hepatitis. She made a satisfactory recovery in about eight weeks. This incident has been repeated many times⁶ with various modifications in the past few years and does not always have so fortunate an outcome.

Little discussion regarding other hepatotoxins is needed. The patient's story in regard to alcohol is rarely to be taken at its face value, and one is inclined to become as skeptical as Mallory,⁷ who recently stated that a man's statements in regard to the quantities of alcohol taken can safely be doubled, those of a woman tripled or quadrupled and those of a teetotaler disregarded. Friends and relatives may supply the information; the patient seldom does.

The severity of abdominal pain is a most difficult matter to interpret and yet is of the greatest importance to diagnosis. Much depends on the character of the patient, his memories of previous illnesses and his individual tendency to exaggerate or minimize symptoms which he may have had. Some persons deal only in superlatives when describing their illnesses, while others have a remarkable capacity for forgetting their troubles entirely. Hence, it is not always easy to prove that the pain which a patient may have had was of a severe or colicky nature. Practically all patients who have stones in the common duct have had severe pain and colic at one time or another, although it may not necessarily be chronologically related to the onset of jaundice. Biliary colic is likely to be, but is by no means necessarily, confined to the right upper quadrant of the abdomen. Wherever it may be situated, however, it usually retains its severity, its intermittent character and its tendency to inhibit respiration, and morphine is required for its relief. Antispasmodics and nitrates may occasionally control the individual attack. The pain of the destructive forms of pancreatitis, on the other hand, is less sharply defined in location but is as severe as that caused by stone in the common duct and of much longer duration. Painful seizures may in fact persist over a period of days, and for them hospitalization and the repeated use of narcotics may be required. The pain of pancreatic carcinoma is rarely so severe, is often worse at night and may be confined chiefly to the back. Morphine is rarely required for its control until relatively late in the course of the disease. At least half of all pancreatic and ductal neoplasms produce little or no pain at any time during the early part of the clinical course.

Too much emphasis cannot be placed on the necessity of a painstaking analysis of the history with special reference to the matters just mentioned. The details should be checked and rechecked and confirmation sought from the family or from other physicians who may have attended the patient.

PHYSICAL EXAMINATION

A special search should be made for four bits of objective evidence in any jaundiced patient: spiders, evidence of cancer elsewhere in the body, the size and consistency of the liver and spleen and a palpable gallbladder.

The vascular spider is almost the trademark of long-standing injury to the parenchyma of the liver. Most of these spider nevi are found in the distribution of the superior vena cava and are often most marked about the head, face and neck. They may vary in size but their pulsating central point and the spidery appearance of the surrounding net of capillaries should serve to identify them. They are rarely associated with obstructive jaundice except in that due to long-standing stricture of the common duct.

Search should be made for tumors elsewhere in the body or a history of tumor in the past. Also metastatic nodes should be the object of a careful search. The old and familiar story of the patient with an artificial eye, or a radical mastectomy scar, a large firm liver and jaundice is still repeated in our wards.

A careful examination of the abdomen with reference to the size and consistency of the liver and spleen is also in order in all cases of jaundice. An extremely large liver usually means syphilis, carcinoma or cirrhosis and is not often found in the presence of obstructive jaundice. The spleen is rarely palpable in cases of metastatic malignant disease of the liver and its presence as a palpable tumor indicates primary hepatic disease. The grossly nodular and stony hard liver is usually carcinomatous; the smooth and symmetrically enlarged liver may be largely fatty.

The last and perhaps the most important feature of the physical examination of the abdomen is an attempt to identify a distended gallbladder. Its presence is proof of obstructive jaundice, usually due to neoplasm in the pancreas or ampulla. The palpation of a distended gallbladder seems to be a lost art and one which certainly should be revived. The time-honored practice of examining the patient while he is in a hot tub and after the administration of a sedative will often prove helpful.

Brief comment may be made here about two other physical findings; the color and texture of the skin and the presence of edema. The golden orange color of the jaundice associated with hepatitis may be contrasted to the blackish or greenish hue of obstructive jaundice. A rough thickened skin with factitial dermatitis and melanosis is almost a specific finding in biliary or cholangiolitic cirrhosis. For the patient acutely ill with recent jaundice, particular attention should be paid to the question of edema. Its presence is not common in obstructive jaundice and points to serious injury to the parenchyma of the liver. Frequently pitting edema of the sacrum, ankles and face precedes the development of hepatic coma in the presence of acute atrophy of the liver. Edema developing after a long period of jaundice is of less significance than that appearing early.

LABORATORY STUDIES WITH PARTICULAR REFERENCE TO TESTS OF HEPATIC FUNCTION

The tests devised and proposed for the study of hepatic function in disease are extremely numerous and new ones are added with great regularity. The multiplicity of these tests indicates clearly that none are uniformly satisfactory. Many are excellent laboratory

6. Schiff, L.: *The Differential Diagnosis of Jaundice*, Chicago, The Year Book Publishers, Inc., 1946.

7. Mallory, T. B.: in discussion on *Acute Cirrhosis of Liver, Alcoholic Type*, Massachusetts Gen. Hosp. Case 33331, New England J. Med. 237: 233-234 (Aug. 14) 1947.

tools for study of particular groups of cases of cirrhosis or hepatitis, but fall short when applied to the more varied material seen in the surgical wards of general hospitals. Others are useful enough but difficult to employ in practice. A good many are not specific tests for hepatic function at all but merely convenient ways of checking certain physiologic disturbances most frequently produced by disease of the parenchyma. These various tests have become so numerous and are used so widely that one may sympathize with the noted surgical authority who complained that most jaundiced patients are "studied to death."

Before tests are undertaken in the individual case, it is well for the physician to pause long enough to determine what he really wants to know. Actually, he is interested chiefly in determining (1) whether there is evidence of mechanical obstruction to the extrahepatic bile passages and (2) whether there is evidence of injury to the metabolic functions of the liver. Rather simple procedures which can be carried out in most hospitals will give this information. The tests which are considered to form an indispensable minimum are the following: (1) the Harrison spot test or methylene blue test for bilirubin in the urine; (2) duodenal drainage to determine the presence or absence of bile in the duodenum; (3) determination of the icterus index (or serum bilirubin) preferably done on more than one occasion to determine the depth and consistency of jaundice; (4) one or more of the simple flocculation tests, of which that performed with thymol in a barbiturate buffer seems to be about the most reliable and sensitive, and (5) determination of the prothrombin time and its response to the injection of a single dose of vitamin K. If one wishes to go farther with study and if facilities are available, determination of serum cholesterol and cholesterol esters and of alkaline phosphatase is often helpful to check on the presence of biliary constituents other than bilirubin in serum. With the results of these tests, added to the aforementioned clinical data, a reasonably accurate appraisal of the situation may be made.

Some consideration of these individual points would appear to be in order. An icterus index, especially if it is determined on successive days, will indicate the depth of jaundice. If the index is consistently more than 100 (normal is usually 10 or less) the patient most probably has either complete carcinomatous obstruction to the duct or severe necrotic hepatitis. With levels of less than 100 either calculous obstruction or a milder and more chronic type of hepatitis is most probably present. A fluctuating icterus index indicates a stone in the common duct; a high constant level, complete neoplastic obstruction; and a gradually falling level, subsiding hepatitis. The icterus index is, of course, a simple colorimetric comparison of the serum with a bichromate standard and does not distinguish pigments such as carotene, which may discolor the serum, from bilirubin. For this reason, actual determinations of the quantity of bilirubin in the blood in both its direct-reacting and indirect-reacting forms are desirable if suitable laboratory facilities are available. If not, a fairly good idea of the depth of serum bilirubin can be had by remembering that an icterus index of 100 represents a bilirubin level of 10 to 12 mg. per hundred cubic centimeters.

When the icterus index is 50 or less, the prehepatic (acholuric) forms of jaundice previously mentioned may be excluded easily by a test of the urine for

urobilin. A simple test of this kind performed on the urine also will give evidence of infectious or serum hepatitis in the preicteric stage and not infrequently will indicate small increases in the serum bilirubin occasioned by a stone in the common duct.

With greater degrees of jaundice and especially if the icterus index exceeds 100, it becomes necessary to determine the patency of the bile passages. The most constant single sign of neoplastic obstruction to the bile passages is complete exclusion of bile from the duodenum.⁸ The use of duodenal drainage is recommended for this purpose chiefly because it is within the reach of every one and, if the position of the tip of the tube is checked roentgenoscopically, study of drainage material has proved reasonably accurate. In doubtful cases, the procedure should be repeated. The presence of gross blood in the drainage is almost pathognomonic of neoplasm, especially if no bile is obtained at the same drainage. The presence of bile, even in rather small quantities, is sufficient proof that the ducts are not completely obstructed. The importance of locating the tip of the tube by roentgenoscopic observation cannot be overestimated, especially in the presence of acholia.

My colleagues and I have little confidence in the visual examination of the stools and have found that the widely used Schmidt test for bile in the stools is scarcely more reliable. If laboratory facilities are available and there is an opportunity to make accurate collections of urine and feces for periods of two to four days, studies of fecal and urinary urobilinogen are invaluable. Such studies are, however, of little value unless they are done meticulously. The significance of the presence or absence of urobilinogen in casually voided specimens of urine cannot be depended on in the absence of confirmatory evidence.

Space does not permit a discussion of the theoretical basis of the various flocculation tests. They are, of course, not specific tests of hepatic function, but measure certain phenomena associated with changes in plasma proteins. For this reason they may give positive results in the absence of hepatic disease. The well known cephalin-cholesterol flocculation test probably depends on the lack of an inhibiting substance associated with normal levels of serum albumin and the presence of an accelerating substance which parallels a rise in serum globulin. The thymol turbidity test appears to depend on a lipid complex, associated with beta globulin, plus a rise in gamma globulin.⁹ The turbidimetric test recently described by Kunkel¹⁰ depends on increases in gamma globulin alone. The first mentioned procedure, the cephalin-cholesterol flocculation has, unfortunately, a considerable margin of error in that it often gives a positive result in obstructive jaundice. Turbidimetric determinations of gamma globulin have not been employed widely enough to justify a final statement as to their usefulness, but a small experience indicates that the test probably gives normal values in obstructive jaundice. The thymol turbidity test as a rule has given consistently negative results in the presence of obstructive jaundice except in a few cases of stricture of the common duct of

8. Young, L. E.: Current Concepts of Jaundice, with Particular Reference to Hepatitis, *New England J. Med.* **237**: 225-231 (Aug. 14); 261-268 (Aug. 21) 1947.

9. Kunkel, H. G., and Hoagland, C. L.: Mechanism and Significance of the Thymol Turbidity Test for Liver Disease, *J. Clin. Investigation* **26**: 1060-1071 (Nov.) 1947.

10. Kunkel, H. G.: Estimation of Alterations of Serum Gamma Globulin by a Turbidimetric Technique, *Proc. Soc. Exper. Biol. & Med.* **66**: 217-224 (Oct.) 1947.

long standing. Unfortunately, the test may give negative or only weakly positive results in cirrhosis, especially in that of alcoholic origin, and at certain stages in the course of toxic hepatitis. A strongly positive result is to be expected in late infectious or serum hepatitis, especially of the more severe degrees, and in the various forms of acute and subacute atrophy of the liver. When practicable, all flocculation tests should be checked against the level of serum albumin and globulin, although this statement does not imply any necessary parallelism in the results of the two determinations.

The determination of blood prothrombin is an essential part in the study of every jaundiced patient and may be quickly and easily done by one of several simplified bedside methods. If the prothrombin time is within normal limits, it gives no information of diagnostic value, but, if the time is elevated, a ready method of distinguishing obstructive from parenchymatous jaundice can be used. This consists of an intravenous dose of one of the various substitutes of vitamin K and repetition of the test for prothrombin in two to four hours. A marked reduction in prothrombin time is the rule in biliary obstruction, whereas in primary hepatic injury, little or no response is noted.¹¹

The serum concentration of alkaline phosphatase, a substance which is widely distributed in the body and usually excreted in part in the bile, is elevated in obstructive jaundice and is either normal or reduced in primary hepatic injury. MacLagan¹² has commented on the fact that the determination of phosphatase used in connection with his thymol turbidity test will differentiate obstructive from nonobstructive jaundice in about 80 per cent of cases. The values for cholesterol and cholesterol esters run roughly parallel with those for alkaline phosphatase. The cholesterol esters are characteristically reduced in cases of atrophy of the liver, a fact which may have considerable prognostic significance.

It is assumed, of course, that findings on routine urinalysis, test for hemoglobin, leukocyte count, flocculation test for syphilis and a roentgenogram are available. Certain accessory laboratory studies are also exceedingly helpful in the study of jaundiced patients. In any doubtful case of jaundice, an examination of the blood with special reference to the structure of the cells as seen in stained smears may pay important dividends. Even a rather cursory examination will reveal the presence of sickle cell anemia or leukemia, the spherical microcyte of congenital hemolytic icterus or the macrocytic anemia of primary hepatic disease. Since hemolytic jaundice is associated with gallstones in about 60 per cent of cases, and since the other laboratory findings referable to jaundice may be somewhat altered in the presence of stone in the duct, the blood smear remains the best single aid to diagnosis of hemolytic jaundice when stones are also present.

The roentgenologic examination of the gallbladder after the administration of dye has relatively little to offer the jaundiced patient. One may occasionally see stones or a primary shadow, but the usual cholecystographic technic does not permit satisfactory visuali-

zation of the gallbladder in the presence of occluded bile passages or hepatic damage. A simple roentgenogram of the upper part of the abdomen may reveal pancreatic or biliary calculi; such roentgenograms should always be taken when patients describe severe or recurrent pain with posterior extension. Roentgenograms of the esophagus, stomach and duodenum may be helpful in excluding primary malignant lesions in these organs. They also may bring out two other important bits of evidence: (1) varicosities in the esophagus, which are of themselves practically sufficient to prove the presence of cirrhosis of long standing and (2) widening and distortion of the duodenal loop which may point to a new growth in the head of the pancreas.

SOME DIAGNOSTIC POINTS IN VARIOUS SYNDROMES ASSOCIATED WITH JAUNDICE

Infectious Hepatitis.—Most physicians who were in military service have had long and unhappy experience with infectious hepatitis, and not a few have suffered from it personally. It requires little comment here except to note the frequency and relative severity of late relapses. These may be of long duration and seem to be more persistent and severe among older persons. The diagnosis should not be abandoned simply because jaundice recurs or is slow in clearing. Persistently positive results of the thymol turbidity test are clinically useful and reliable in such circumstances.

Homologous Serum Jaundice.—Homologous serum jaundice may be detected in its preicteric phase by various tests of hepatic function of which the sulfobromophthalein sodium and cephalin-cholesterol flocculation tests are the most reliable. Jaundice may develop suddenly and the disease may run a rapidly fatal course. However, in other fatal cases the course may be protracted. There may be increases or decreases in the depth of jaundice, anemia, gross hepatic enlargement with ascites, hemorrhage, pruritus and abdominal pain.¹³ It is in such cases that the irregular course, pain and fever suggest the possible presence of stone in the biliary tract, and, in fact, stones may appear as a terminal event. Their removal when subacute atrophy of the liver is associated has done little to benefit the patient or alter the course of the disease.

Cholangiolitic Cirrhosis.—Cholangiolitic cirrhosis has attracted much attention lately because of the possibility that it is a late residue of virus hepatitis. It is recognized clinically by its chronic course, melanosis, factitial dermatitis, the presence of a large liver and spleen, the remarkable preservation of the metabolic functions of the liver and the persistent elevated levels of bilirubin, phosphatase and cholesterol in the serum. It is not known to be amenable to either medical or surgical treatment.

Stone in the Common Duct.—One may paraphrase the old aphorism regarding syphilis and say that, if one knew stone in the common duct in all its clinical manifestations, all other knowledge of biliary and hepatic disease would be at one's disposal. For clinical purposes, it must be recalled that practically any syndrome associated with intrabiliary or extrabiliary disease can be closely mimicked by stone. Endless examples could be cited to prove this point. This fact also must be considered in diagnosis and the selection of cases for surgical exploration. Two points may be

11. Lord, J. W., Jr., and Andrus, W. DeW.: Differentiation of Intrahepatic and Extrahepatic Jaundice: Response of the Plasma Prothrombin to Intramuscular Injection of Menadione (2 Methyl-1, 4-Naphthoquinone) as Diagnostic Aid, *Arch. Int. Med.* **68**: 199-210 (Aug.) 1941.

12. MacLagan, N. F.: Liver Function Tests in the Diagnosis of Jaundice: A Review of Two Hundred Cases, *Brit. M. J.* **2**: 197-201 (Aug. 9) 1947.

13. Lucke, B.: The Pathology of Fatal Epidemic Hepatitis, *Am. J. Path.* **20**: 471-493 (May) 1944.

helpful in this connection: (1) it is rare for a patient with common duct stone not to have had colic at some time and (2) it is rare for a stone to cause complete obstruction of the ducts for any length of time.

Strictures.—Postoperative strictures of the biliary ducts are on the increase and as always present a grave problem for the surgeon. Diagnosis, however, is easy if the examining physician inquires carefully into the postoperative course of the patient. A story of intermittent jaundice with biliary fistula which alternately opened and closed is almost diagnostic. In late cases splenomegaly and vascular spiders are not uncommon, pruritus is severe, and latent hemorrhagic tendencies are often detected. Laboratory studies often indicate evidence of injury to the parenchyma of the liver, which is not ordinarily of a degree to interfere with successful surgical results.

Chronic Destructive Pancreatitis With or Without Stones.—Chronic destructive pancreatitis with or without stones is commoner than is generally believed. It may be recognized by the persistence and severity of its painful seizures, by the fact that it may be associated with steatorrhea, fatty liver and diabetes mellitus and by the evidence of regurgitation of pancreatic enzymes, lipase and amylase, into the blood stream. It is a dramatic and violent disease, unlike the insidious pancreatic carcinoma. It rarely produces complete biliary obstruction and may pass through numerous episodes without demonstrable icterus.

INDICATIONS AND CONTRAINDICATIONS TO SURGICAL TREATMENT

It may be inferred from this brief résumé that a good history, a painstaking physical examination and certain minimal laboratory studies will point the way to an accurate diagnosis of jaundice in a large majority of cases. Unfortunately, however, there are many persons whose histories are confusing, whose physical findings are meager and on whom laboratory studies give equivocal results. In such persons, a reasonable doubt in regard to the nature of the diagnosis must remain. It is of such patients that one may say, as did one famous surgical authority, that a guess is a poor peg on which to hang a man's life and that the possible benefits of exploration may well justify the risk. This widely quoted dictum has been responsible for many rather unfortunate surgical procedures on jaundiced patients, many of which might have been avoided by reference to the statistical odds in the individual case.

There are four well recognized indications for explorations in the presence of jaundice: (1) a reliable history of gallstones, colic or preferably both; (2) proved intermittent biliary obstruction with fever; (3) a patent biliary fistula, and (4) proved complete and permanent biliary obstruction. The reader is invited to note the words "reliable" and "proved." The principal problem is to be sure of the facts; if any doubt exists, the data should be reviewed and checked.

Only a few of the many contraindications to surgical procedures on jaundiced patients will be mentioned. All are directed at the avoidance of surgical procedures on patients with jaundice caused by injury to the parenchyma of the liver alone. Perhaps the most important is the history of transfusion of blood or plasma infusions from two to four months prior to the onset of jaundice. In these circumstances, the

patient's interests are best served by deferring a decision until further observation confirms or disproves the diagnosis of homologous serum jaundice. A second important contraindication is the presence of vascular spiders, edema and evidence of collateral circulation, singly or in combination. These contraindications may be waived in the presence of a known postoperative stricture of the common duct, but hardly otherwise. A third contraindication is the persistence of intense jaundice (icterus indexes of 100 or more) in the presence of patent bile passages. Such patients are almost invariably suffering from primary hepatic injury and will not be helped by operation. A final, and by no means the least important, contraindication is a prolonged prothrombin time which does not respond to the administration of vitamin K. If the indications and contraindications stated are borne in mind, less and less should be heard of explorations done on patients with primary liver disease; surgical results should improve and the mortality rate decrease.

Special Article

CARCINOMA OF THE BREAST

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New York

(Concluded from page 205)

This article is the fifteenth of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment.

PROVING THE DIAGNOSIS

The last generation of surgeons had to rely solely on their knowledge of gross pathology in proving the nature of tumors of the breast, and this often led them astray. Thus Bloodgood,³ writing in 1914 of his experience in Halsted's clinic in the diagnosis of breast tumors, stated: "Among 542 benign lesions . . . 54, or 10 per cent, have been incorrectly treated for cancer [i. e., radical mastectomy was done]. . . . It is interesting to note that among these 54 benign lesions which were treated as malignant, in 27 cases the diagnosis of malignancy was based upon the clinical appearance alone. . . . In 24 cases, the diagnosis of cancer was based upon the gross appearance at exploratory incision. . . ."

Fortunately, this kind of mistake is no longer necessary, for today there are quick and sure methods of proving the diagnosis microscopically. Pathology has grown up and become a senior, partner of surgery in dealing with lesions of the breast. The skilled pathologist is just as essential as the surgeon, and I believe that the treatment of tumors of the breast should not be attempted in communities that are unwilling or unable to support a properly trained pathologist.

Biopsy.—We are all agreed today that biopsy and immediate microscopic examination are often indicated. The only differences of opinion are in regard to the method.

Aspiration Biopsy: Aspiration biopsy has been advocated by the Memorial Hospital group for some years and has gained many adherents. The procedure is ordi-

3. Bloodgood, J. C.: Diagnosis and Treatment of Borderline Pathological Lesions, Surg., Gynec. & Obst., 18: 9, 1914.

narly carried out in the surgeon's office, before the patient has entered the hospital. With the patient under local anesthesia a large bore needle attached to a syringe is inserted into the tumor and, while suction is exerted, is withdrawn and advanced several times, sucking up a core of tumor cells into the bore of the needle.

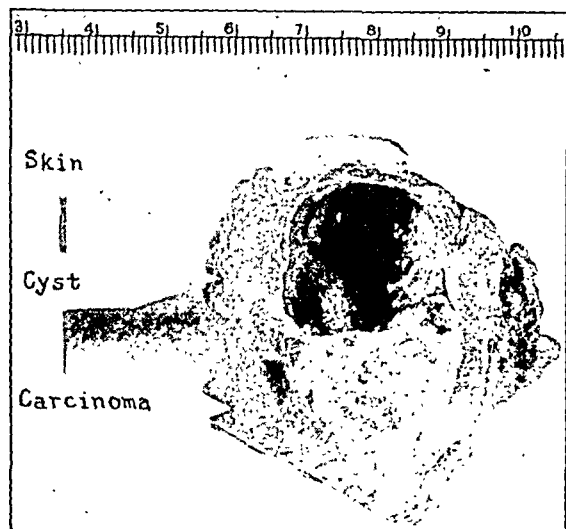


Fig. 34.—A cyst of the breast masking a carcinoma.

The material thus obtained is smeared on a glass slide and fixed and stained. In this manner a fairly accurate impression of the cell types of the tumor is gained, although the details of cell structure are somewhat distorted by the crudity of the fixation and staining.

This kind of preparation gives no information, however, as to the cellular arrangement and the general architecture of the lesion. The pathologist is forced to rely in making his diagnosis on cytology rather than on histology. This is a great handicap. For example, in distinguishing certain better differentiated types of carcinoma of the breast from benign epithelial proliferation, the arrangement of the cells within the ducts, as well as their invasive character, is just as important as the type of cells—and aspiration biopsy does not provide this crucial information. This is the main reason why Dr Stout and I, working together at this problem over a period of years, have come to believe that aspiration biopsy is not a reliable method of diagnosing lesions in the breast.

There is also a theoretic objection to aspiration biopsy on the ground of its roughness. A good deal of force is required to plunge a large bore needle into the firm structure of mammary carcinoma—and this is exerted not once but several times. We fear that this trauma may squeeze carcinoma emboli into veins. If our emphasis on gentleness in manipulating carcinoma of the breast means anything we should avoid a method as rough as aspiration biopsy.

Another disadvantage of aspiration biopsy is that cystic disease and carcinoma may coexist in the breast, the cyst or cysts being prominent and the carcinoma small, as in figure 34. Aspiration would empty the cyst but leave the inconspicuous carcinoma undetected. Surgical exploration of a case of this kind, with excision of the cyst and careful inspection and palpation of the surrounding breast tissue through the open wound, would be more likely to detect the carcinoma.

A final objection to aspiration biopsy is that success with this method becomes more and more difficult as

the carcinoma diminishes in size. It is difficult indeed to hit with the point of the aspirating needle a nodule in the depths of the breast measuring only 4 or 5 mm. in diameter. Yet, as the education of women in the detection of tumors of the breast improves, lesions of this size are seen more and more frequently. Figure 35 shows such a primary carcinoma measuring 4 mm. in diameter which we recently excised for biopsy. It is just in such difficult diagnoses, when one must have a reliable method of proving the nature of the tumor, that the aspiration method will most often fail.

Incisional Biopsy: These are some of the reasons why we prefer incisional biopsy and frozen section as the method of choice in proving the nature of tumors of the breast. Our procedure is as follows: The diagnostic problem is discussed fully with the patient, as gently and as hopefully as possible. Her consent for radical mastectomy, should it be required, is obtained. She is admitted to the hospital and all preparations made for the radical operation. The surgical pathologist often sees and examines the patient before operation. He is regularly present in the operating room when the biopsy is done. "Pentothal sodium" administered intravenously and supplemented with nitrous oxide and oxygen is our anesthetic of choice. We do not use local anesthesia: it puts the patient on the rack of suspense while the diagnosis is being made.

A small incision, 3 or 4 cm. in length, is made through the skin over the tumor, and deepened to expose its surface. All vessels are meticulously caught with mosquito clamps and tied with fine silk, so that the wound is perfectly dry and the surgeon is able to see the cut surface of the lesion as he incises it. If the tumor is solid a small wedge, measuring about 3 by 5 mm., is excised. This is ordinarily adequate for our frozen section. On infrequent occasions when the microscopic diagnosis is difficult the pathologist may ask for a second small wedge of tissue. We do not excise the whole tumor for diagnosis unless it is a very small one, measuring only a few millimeters in diameter, for we believe that the practice adds unnecessarily to the risk

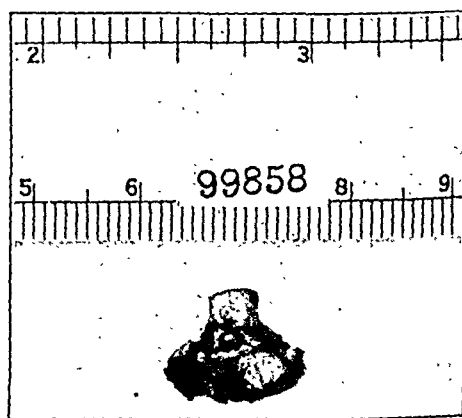


Fig. 35.—A very small carcinoma of the breast measuring 4 mm. in diameter.

of producing metastasis. If the carcinoma is of some size the line of local excision will cut across dilated veins which may carry off carcinoma emboli. Biopsy must, of course, always carry with it some degree of risk of causing metastases. Since we cannot avoid it in many cases our aim is at least to minimize the risk.

The argument that excising the whole tumor for biopsy is safer because the line of excision is around

and not through the tumor does not, of course, have the approval of the pathologist. He knows that carcinoma frequently infiltrates far beyond the grossly visible limits of the disease and that no surgeon can be reasonably sure that a local excision will get beyond it.

The small wedge which we excise for frozen section is heated for a few seconds in Bouin's fixative. Prolonged heating is not desirable, for it distorts the tissue too much. It is then frozen and cut on a freezing microtome. We cut a block of tissue of sufficient size to show the architecture of the tumor. We do not depend on a section so small that only a few cells are shown. The sections are floated out in a basin of water and picked out on a glass rod and stained in an aqueous polychrome stain. Five or ten minutes only are required to prepare these sections.

Although we believe that frozen sections made in this manner provide the best immediately available microscopic evidence, we have learned that there is one type of neoplasm in the breast in which nothing except a good paraffin section suffices. This is the papillary growth situated at a distance from the subareolar area of the breast. It is so difficult to distinguish papillary carcinoma from papilloma in this location that preliminary biopsy as a separate operative procedure, and careful study of paraffin sections, should precede any operative therapy.

There are rare occasions when the frozen section technic will fail to give an immediate diagnosis because the microscopic picture is confused by the presence of inflammation or by the variety and richness of the epithelial proliferation. The best differentiated carcinomas, of course, give the most difficulty. On these rare occasions when the pathologist cannot be certain what the lesion is the surgeon closes the wound and waits for a paraffin section, available in twenty-four hours. *He does not proceed with mastectomy without being certain of his diagnosis.*

The surgeon who performs a radical mastectomy merely on the suspicion that he is dealing with a carcinoma, because he feels that it is the best thing to do in this dilemma, runs an unnecessary risk of mutilating the patient needlessly. A study of a series of cases of carcinoma of the breast in our clinic in which there was a delay of from one to ten days between biopsy and the radical mastectomy showed that the end results were no worse than in cases in which immediate operations were carried out. While we do not of course recommend delaying operation when it can be done at once, this evidence justifies delay which is unavoidable, as for instance when the frozen sections do not yield a definite diagnosis or when a pathologist is not available to prepare frozen sections and the surgeon has no other course but to excise tissue for biopsy and send it to a pathologist in the community for a twenty-four hour paraffin section.

Simple mastectomy as an alternative procedure when the biopsy fails to yield an immediate microscopic diagnosis is, in our opinion, equally unwise. If the lesion finally proves to be benign, removal of the breast is unnecessary. If it proves to be a carcinoma a simple mastectomy spoils the field, speaking in a technical sense, for a proper radical mastectomy, besides putting the patient through an additional major operation.

To return to the surgeon in the operating room who has just received word from the pathologist that the frozen section shows carcinoma, I recommend that he place a small piece of gauze soaked in formaldehyde in the wound or coagulate it with the electrocautery, and

close it tightly with a continuous suture of silk. Since the danger of blood oozing from the biopsy wound and carrying cancer cells into the operative field of the subsequent radical mastectomy is very real, it has been our custom to seal the wound with a patch of rubber dam cemented in place with rubber cement.

This method of proving the diagnosis of a tumor of the breast is not only the most reliable one with which we are familiar, but it is the one most likely to lead to prompt treatment. When it has been explained to the patient it leaves her in no doubt about the serious possibilities of her seemingly innocuous tumor of the breast. She is usually willing to come into the hospital at once. From the physician's point of view it provides him with a direct and adequate plan to follow for every patient with a lesion in the breast. He will not be tempted to make a biopsy of the tumor in his office. If he is not a member of the surgical staff of a reputable hospital or is not himself qualified to perform a radical mastectomy, he will refer the patient immediately to a surgeon who is properly qualified. He will not procrastinate because he is in doubt about the nature of the lesion, sending the patient away with instructions to apply heat or cold, or reassuring her and telling her to return in a month. He will instead send at once every woman with a dominant tumor in her breast, or retraction signs, or abnormal erosion or discharge from the nipple, into the hospital to have the nature of her lesion proved by biopsy. The practice of this simple rule is the best hope of reducing the mortality of carcinoma of the breast today.

TREATMENT OF CARCINOMA OF THE BREAST

The diagnosis of carcinoma having been proved, the surgeon must decide how to treat it. This decision is a complex and technical one, but it should concern the general practitioner or internist who makes the original clinical diagnosis at least to the extent that he should have an understanding of the basic principles of the modern therapeutic attack on cancer of the breast. He must know enough to assure himself that his patient is getting the best possible treatment.

First of all, of course, he must have seen enough of the results of the modern radical surgical attack on cancer of the breast to believe that the disease can be cured. I assume that the reason why some physicians are content to do half-hearted and incomplete operations for cancer of the breast is simply that in their personal experience, with the surgical methods they have seen tried, the disease has been invariably fatal. Our system of medical education is not yet well enough developed in this country to make it possible for every medical student, or even every hospital intern, to have seen in the follow-up clinic patients cured of carcinoma of the breast by radical surgery. Until this kind of evidence is supplied to students they will not be convinced, for they share the prejudice that lies deep in the heart of every man that cancer is incurable. The truth is that, considering all patients who come for treatment of carcinoma of the breast, including those whose disease is the most advanced, five year clinical cure can be achieved today in about one third. By this I mean that the patient remains free of all evidence of her carcinoma for five years. If the patients with far advanced and inoperable lesions are excluded from the calculation, about one half of those operated on remain well for at least five years. In patients without axillary metastases the five year cure rate reaches 70 per cent.

After five years have elapsed the frequency of recurrence is much less, as shown in Simmons' ⁴ chart (fig. 36) of the late results of operation. In his series of cases these late recurrences developed only in patients who had axillary metastases at the time of operation. One can therefore say that a woman whose disease is attacked before axillary metastases have developed has a 70 per cent chance not only of five year cure but of permanent cure.

If one could convince all practicing physicians of this truth one should have gone a long way toward improving present day treatment of carcinoma of the breast.

When methods of treatment are discussed it is fundamental to make a distinction between cure and palliation. This is an important distinction because, as I shall show later, attempts to cure lesions which are quite beyond the reach of present methods not only discredit the methods but actually increase the patient's discomfort and shorten her life.

There are only two methods of treatment which can be claimed to cure carcinoma of the breast—radiation and surgery. There is today such a wide range of opinion concerning the merits of radiation that its use must be considered in some detail.

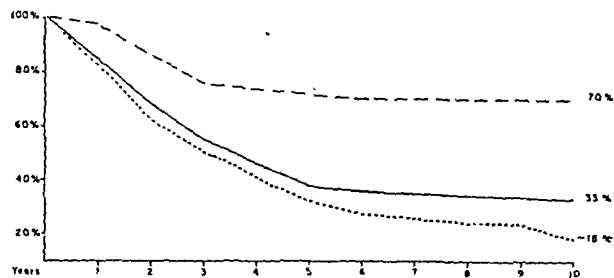


Fig. 36. Ten year end results in cancer of breast. Solid line, total, 134 cases, 33 per cent cures. Line of dots, axilla involved, 95 cases, 18 per cent cures. Line of dashes, axilla not involved, 39 cases, 70 per cent cures. (Patients living with disease at end of ten years are counted as dead.)

ROLE OF RADIATION

Radium, applied interstitially in needles, has been used extensively for carcinoma of the breast by Mr. Geoffrey Keynes ⁵ at Saint Bartholomew's Hospital. In this country McKittrick ⁶ has given the method a thorough trial and has found it less desirable than surgery in operable cases. Pain and limitation of arm motion are disturbing late after-effects of the radium treatment. A more important disadvantage is the fact that the method cannot be depended on to destroy carcinoma in the axillary nodes. This truth is apparent in the report of Mr. J. P. Ross, ⁷ from Keynes's own clinic, concerning the microscopic observations in a series of cases in which the breast and some of the axillary lymph nodes were removed surgically three months after the completion of the radium treatment. In 30 per cent of the cases active-looking carcinoma cells were found in the axillary lymph nodes. Surgical treatment, on the other hand, is highly efficient in eradicating carcinoma in the axilla. Local recurrence develops in the axilla in less than 5 per cent of the cases in which

a thoroughly radical operation is carried out. In view of this fact it would seem to me that interstitial radium has no proper place in the treatment of operable mammary carcinoma.

Roentgen radiation deserves more serious consideration as a curative method, although I must admit that in our own clinic at the Presbyterian Hospital our experience with it as a curative agent has been discouraging. We have reluctantly come to the conclusion that roentgen rays do not permanently eradicate carcinoma in the breast, although if given in maximum doses they often lock the disease up in scar tissue for several years.

This conclusion has been forced on us from our experience with an experimental series of 38 cases in which treatment was given between 1933 and 1937 at the Presbyterian Hospital. In this series large doses of roentgen rays were given, and radical mastectomy

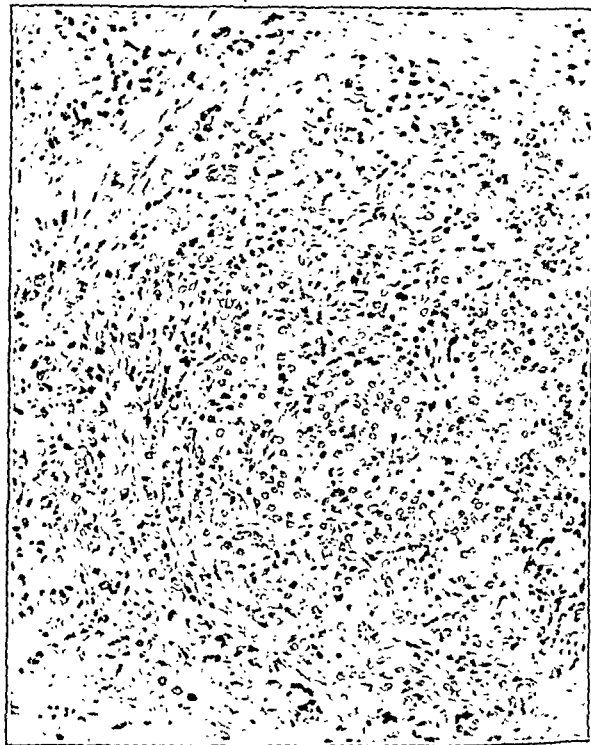


Fig. 37. —Pretreatment biopsy of carcinoma of the breast.

then performed. The roentgen treatment in these cases has been described by Lenz, ⁸ who supervised it. The fractional dose method was used, 100 r to 200 r being given daily to each of one or more portals, depending on the patient's tolerance. The breast was treated through four portals directed tangentially to the chest wall, and often through an additional portal directly over the tumor. The axilla and supraclavicular regions were treated through an anterior and a posterior portal and through a third direct axillary portal. Approximately 2,000 r in air was given to each of the breast and axillary portals. The tumor dose to the primary lesion in the breast reached 4,500 r.

Approximately two months are required for this type of radiation, and it is necessary to wait at least another month for the severe cutaneous reaction to subside before it is safe to carry out a thoroughly radical

4. Simmons, C. C.: Cancer of the Breast: Ten Year End-Results, Surg., Gynec. & Obst. 74: 763, 1942.

5. Keynes, G.: The Place of Radium in the Treatment of Cancer of the Breast, Ann. Surg. 106: 619, 1937.

6. McKittrick, L. S.: Interstitial Radiation of Cancer of the Breast: A Review of Ninety-Six Cases of Cancer of the Breast Treated According to the Technic of Geoffrey Keynes, Ann. Surg. 106: 631, 1937.

7. Ross, J. P.: An Investigation into the Effects of Radium upon Carcinoma of the Breast, Brit. J. Surg. 27: 211, 1939.

8. Lenz, M.: Tumor Dosage and Results in Roentgen Therapy of Cancer of the Breast, Am. J. Roentgenol. 56: 67, 1946.

mastectomy. The tissues removed at operation were studied by Stout with special attention to the question of the destructive effects of radiation. Many blocks of tissue were studied from each specimen. In every case in the series persisting carcinoma cells were found, although the destructive effect of the radiation was often

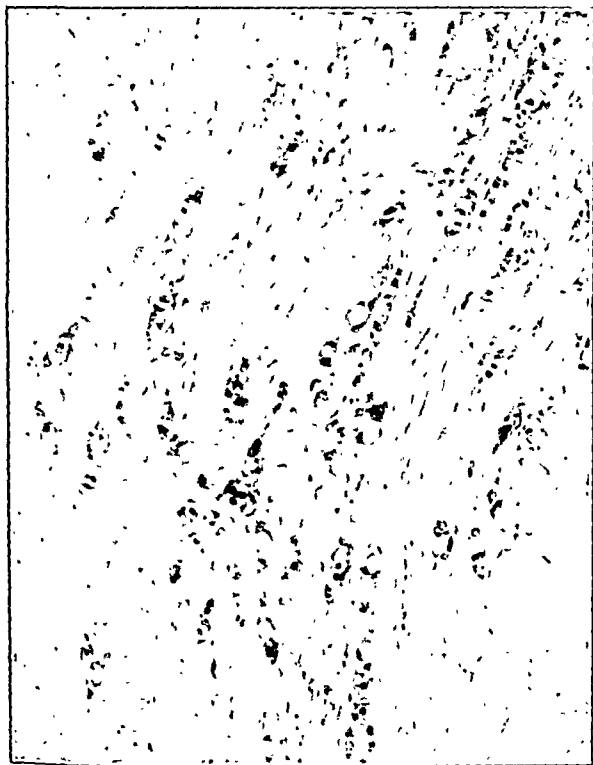


Fig. 38.—Carcinoma of the breast (same case as in fig. 37) after treatment with 8,500 r.

great. The details of the histologic findings in representative cases in this series were reported by Beach.⁹ I include photomicrographs from one of these cases. Figure 37 shows the appearance of the primary breast carcinoma in the preradiation biopsy. Figure 38 shows the same tumor as it appeared when the breast was removed two months after the completion of the roentgen treatment. Only scattered strands of carcinoma cells remained, locked up in a dense hyalinized stroma. Some of these cells appeared to be well preserved although they did not show mitoses, but in most of them the radiation effect was apparent from their gigantic and pyknotic nuclei and vacuolated cytoplasm.

Figure 39 shows the appearance of the axillary lymph node metastases. They appear to be unaffected by the irradiation although they were heavily treated.

The greater resistance to radiation of metastases in lymph nodes is, of course, a well known phenomenon, which is observed in other types of carcinoma. In mammary carcinoma this inability of roentgen treatment to control the axillary metastases is an unsurmountable objection to reliance on this method for cure.

Our objection to reliance on roentgen treatment for the cure of carcinoma of the breast and its axillary metastases is not based on microscopic evidence alone; clinical experience has been equally decisive. We have repeatedly seen patients with operable carcinoma of

the breast in whom intensive roentgen treatment, given in preference to surgery and with the hope of cure, caused only temporary regression of the disease. After an interval, sometimes lasting as long as five years, the disease broke out of its fibrous bonds and reappeared locally. The following case history is a typical one.

In September 1938, H. M., a woman aged 36, discovered a small tumor in the upper outer sector of her left breast. There was a single small clinically involved axillary node. The tumor of the breast was excised for biopsy at another hospital and proved to be a carcinoma. The patient refused radical mastectomy and was therefore treated intensively with roentgen rays. The breast received a total of 9,750 r in air through five different portals, given in two separate series of treatments over a period of fifteen months. The axilla received a total of 8,650 r in air given through three portals during the same period.

Both the tumor of the breast and the axillary node disappeared after the radiation. Some thickening in the region of the original tumor was noted in December 1942. This induration increased slowly. By March 1944, it had grown so that the radiologist in charge of the patient became convinced that it represented a local recurrence. Being unable to give further radiation he persuaded the patient to have an operation. She entered the Presbyterian Hospital April 5, 1944, five and one-half years after radiation had been started.

The skin over the axilla and upper outer portion of the breast showed pronounced telangiectasia and atrophy. Beneath the center of the radiated area in the breast there was a firm mass 4 cm. in diameter, fixed to the pectoral fascia. No axillary or



Fig. 39.—Axillary metastases (same case as in figs. 37 and 38) after treatment with 4,500 r.

supraclavicular nodes were palpated. Roentgen studies failed to show metastases in lungs or bones. Radical mastectomy was therefore done on April 7, 1944, a large Thiersch graft being used to cover the operative defect on the chest wall. Microscopic study showed well preserved carcinoma in the breast and a small metastasis in one axillary lymph node. To date (October 1947) there has been no local recurrence or evidence of distant metastases.

9. Beach, A.: The Effects of Roentgen-Ray Dosage in Breast Carcinoma, *Am. J. Roentgenol.* **46**: 89, 1941.

The use of roentgen rays prophylactically as a supplement to surgery is another question—one much debated today. Prophylactic radiation has been given either before or after operation, the latter form being the more popular one. Three portals have usually been used—a supraclavicular portal, one which includes the operative field on the chest wall, and a third directed to the axilla. The total dosage and the rate at which it has been given have varied widely. At the Congress of the German Roentgen Ray Society in 1926, for instance, a dose of 300 r at bimonthly intervals for as long as two years postoperatively was recommended, and this type of protracted therapy was much used everywhere during the following decade. During recent years most radiotherapists have concentrated their treatment and raised their dosage of prophylactic radiation somewhat. A typical plan of treatment today would administer a total of 1,000 r to each of the three portals mentioned, given at the rate of 250 r to one or more portals twice weekly. Some radiotherapists push the total dosage to each portal up as high as 2,000 r, but this is unusual.

It is at once apparent that these prophylactic doses of radiation are very small indeed as compared with the doses given by Lenz in our Presbyterian Hospital experimental series of cases in which preoperative treatment was given: They amount at most only to about one quarter of the total dosage in our series. Moreover, the method which Lenz used of administering radiation in small daily doses is a more effective one than the old fashioned technic of giving larger single doses repeated at long intervals.

In view of the fact that carcinoma was not entirely destroyed by the large doses used in our experimental series it seems unlikely that the small amounts of radiation commonly given prophylactically before or after operation can destroy all carcinoma cells which may have been left in the operative field. It is conceivable that such prophylactic radiation may restrain the growth of residual disease to some extent and delay its reappearance, but it is unlikely that such restraint will alter the late results much.

This theoretic ineffectiveness of prophylactic radiation is substantiated by study of the actual results. Many reports have of course been published in which it was claimed that prophylactic radiation significantly raised the cure rate, but most of this evidence can be viewed with suspicion because the series of cases reported are not strictly comparable. It must be realized that we have been going through an era in which the results of the exclusively surgical treatment of breast cancer are steadily improving. I will refer again to this fact later in my discussion. For this reason it is not proper to compare recent case series in which surgery has been supplemented by irradiation, with earlier case series in which surgery alone was used. Ahlborn's¹⁰ paper and Marshall and Hare's¹¹ recent report are good examples of this kind of improper comparison.

Carefully compiled case series comparing the results of operation with those of operation supplemented by radiation have been reported by Simmons, Taylor and Wallace¹² from the Massachusetts General Hospital

and by Harrington¹³ from the Mayo Clinic. The former reported that prophylactic radiation did not influence the results of operation. The latter found a slight increase in the percentage of five year survivors in the radiated group, but concluded that irradiation had not had a great effect on the late results of surgical treatment.

Even if one admits that prophylactic radiation may have some restraining effect on carcinoma cells left in the operative field, its use routinely in all patients seems a heavy price for a small possible gain. It has been shown by Taylor and his associates at the Massachusetts General Hospital, as well as in our own clinic, that if patients are properly selected for operation and a thorough operation is done, only about 10 per cent have local recurrence in the field of operation, that is, the chest wall and axilla. Prophylactic radiation to these areas can be of benefit therefore only in this 10 per cent, and it has been our experience that when local recurrences do appear in this small group of cases they can be adequately dealt with by radiation given at the time of appearance. These patients do not succumb to their local recurrences. They die from distant metastases—the *bête noire* in cancer of the breast.

These are the considerations which have led us to abandon prophylactic radiation in our own clinic after using it over a period of years. In our experience it was expensive to the patient both economically and biologically. We found no definite evidence that it raised the rate of cure.

There is, however, one type of case in which we continue to give postoperative radiation, but only to the supraclavicular region. It is the type of case in which the surgeon, while performing radical mastectomy on a patient whose disease had appeared to be operable, finds to his chagrin that the axilla contains many small involved nodes extending all the way up to the apex of the axilla. This type of extensive axillary involvement cannot be detected preoperatively by any method with which we are familiar, and the surgeon is thus blindly led into the error of operating on incurable disease, for these patients almost invariably succumb to distant metastases. Surgery does remarkably well in this type of disease on the chest wall, and in the

axilla if it is extensively involved. But since we do not attempt to remove the supraclavicular lymph nodes, which are the next way station for metastases; and which are often involved in these patients with extensive axillary metastases, it seems wise to radiate the supraclavicular area. Lenz gives these patients 3,000 to 4,000 r administered in daily doses of 100 to 200 r.

The question might be raised of the advisability of giving routine prophylactic radiation to the supraclavicular area in the operable group of cases. Our answer would again be that it would not seem worth while to radiate all of these patients when only the few who are doomed to have supraclavicular metastases develop can benefit from the treatment. In our Presbyterian Hospital series of cases of radical mastectomy only 11 per cent of the patients in the operable group of cases subsequently had supraclavicular metastases. Again, it has been our experience that radiation given to these metastases at the time of their appearance holds them in check until more distant metastases in bone or lungs get beyond control. More-

10. Ahlborn, H.: Preoperative Roentgen Treatment of Mammary Tumors at Radiumhemmet, *Acta chir. Scandinau.* 74: 474, 1934.

11. Marshall, S. F., and Hare, H. F.: Carcinoma of the Breast: Results of Combined Treatment with Surgery and Roentgen Rays, *Ann. Surg.* 125: 688, 1947.

12. Simmons, C. C.; Taylor, G. W., and Wallace, R. H.: Cancer of the Breast: End-Results, Massachusetts General Hospital, 1924, 1925 and 1926, *New England J. Med.* 210: 836, 1934.

13. Harrington, S. W.: Carcinoma of the Breast with Results of Radical Mastectomy, *S. Clin. North America* 21: 1063, 1941.

over, radiation to the supraclavicular and axillary areas often increases shoulder discomfort and edema of the arm. We do not wish to inflict this penalty on all our patients for a questionable benefit to a few.

In summary, it can be said that critical evaluation of the evidence at hand does not give radiation any substantial place in the curative attack on carcinoma of the breast. Although it is widely used as a supplement to surgery its value has not been proved.

ROLE OF SURGERY

Surgery remains our sole reliance for the cure of cancer of the breast. With this fact before us our first duty is to try in every way that we can to improve our surgery. The first step in this direction, it has seemed to us, is to select our cases for operation more critically. At the Presbyterian Hospital Dr. Stout and I set out, some years ago, to try to define, from the records of the hospital, in just what types of cases cure can be effected by operation. We were favored in this undertaking by the fact that the unit case records of patients with carcinoma of the breast in the Presbyterian Hospital have been exceptionally complete. They have often included photographs of the lesion, and the clinical descriptions of the lesion have usually been fairly detailed. We analyzed the records of all female patients with carcinoma of the breast coming to the hospital between the years 1915 to 1934, inclusive.

In studying this material we utilized the punch card method. In this way it is not only possible to work out correlations between any number of different factors with ease, but the findings can be checked and counter-checked in a way that is scarcely possible by hand sorting and arithmetic.

Having the punch cards with all the clinical data recorded on them, we were able to study correlations between the local recurrence rate, the five year cure rate and a whole series of clinical features of carcinoma of the breast as recorded in our series of cases.¹⁴ We presented tables showing these correlations for twenty-one different clinical factors. There is not space here to do more than summarize our positive findings.

There were eight types of cases that together formed a group in which surgery did not achieve a single permanent cure (table 1). We called this group, therefore, the *categorically inoperable group*. This experience led us to conclude that radical mastectomy is futile in such cases. There are several types of cases in this group regarding which some discussion is desirable.

The group of cases with edema of the skin has especially interested us. I have already discussed the pathologic significance of this important clinical sign. In order to determine as accurately as possible the clinical significance of edema of the skin we classified the cases in which the phenomenon was present into two groups: (1) those in which the extent of the edema was limited to less than one third of the skin over the breast, and (2) those in which it extended over a larger area. The group of 41 cases included in table 1 were all of this latter type. When this extensive edema is interpreted in terms of the presence of carcinoma emboli in the subdermal lymphatics throughout the whole edematous area it is apparent why even the most radical surgical treatment always fails to cure.

14. Haagensen, C. D., and Stout, A. P.: Carcinoma of the Breast: Results of Treatment, *Ann. Surg.* **116**: 801, 1942; Carcinoma of the Breast: Criteria of Operability, *ibid.* **118**: 859 and 1032, 1943.

The so-called inflammatory type of carcinoma of the breast is another type of incurable carcinoma which merits special consideration. In recent years this acute and fatal form of the disease has been well described by American and German writers, particularly Lee and Tannenbaum¹⁵ and Taylor and Meltzer.¹⁶

In our series of cases there were 28 patients with the inflammatory type of carcinoma. In 20 of them radical mastectomy was performed. In half of these there was known local recurrence, and all succumbed to their disease within a relatively short time after operation. It is understandable why this experience led us to place this type of case in the categorically inoperable group.

Another group of cases in our series in which the results of surgery were disastrous was that in which carcinoma of the breast occurred during pregnancy or lactation. Carcinoma occurring in the breast at this time, of course, shares the tremendous growth stimulus which physiologic need imparts, and it is only reasonable to expect the disease to be exceptionally malignant. Recently, however, Harrington¹⁷ has reported results in a much larger group of cases than ours from the

TABLE 1.—Results of Radical Mastectomy in Categorically Inoperable Groups of Cases

Clinical Group	Number of Cases	5 Year Local Recurrence		5 Year Clinical Cures, Number
		Number	Percentage	
Extensive edema of skin over breast...	41	27	63.9	None
Inflammatory type of carcinoma.....	20	10	50.0	None
Carcinoma developing during pregnancy or lactation.....	20	6	30.0	1*
Satellite nodules in skin over breast....	7	4	57.1	None
Intercostal or parasternal nodules.....	1	0	....	None
Edema of the arm.....	3	2	66.7	None
Proved supraclavicular metastases.....	13	7	53.3	None
Distant metastases	7	1	14.3	None
Total.....	74	36	48.6	1*

* Recurrence after six years.

Mayo Clinic, which give a more hopeful picture. While all except 1 of our group of patients had axillary metastases, 15.2 per cent of his did not have them. Sixty-one per cent of these patients who did not have metastases were still alive five years after operation. In view of Harrington's experience it may be that our group of cases was a particularly unfortunate one and that radical mastectomy is justified in these patients, provided, of course, that the disease is locally operable.

The relationship of the age of the patient to her chance of cure is a separate question, although again no doubt in some way dependent on physiologic differences. There is a widely held impression that carcinoma of the breast is incurable in young women. This is certainly incorrect. Taylor¹⁸ showed that the disease indeed tends to be more malignant in youth, but in carcinomas of the breast of comparable extent and equal grade of malignancy, age alone does not affect curability. De Cholnoky¹⁹ collected reports of a total

15. Lee, B. J., and Tannenbaum, N. E.: Inflammatory Carcinoma of the Breast, *Surg., Gynec. & Obst.* **39**: 580, 1924.

16. Taylor, G. W., and Meltzer, A.: "Inflammatory Carcinoma" of the Breast, *Am. J. Cancer* **32**: 33, 1938.

17. Harrington, S. W.: Carcinoma of the Breast: Review of Surgical Treatment when the Carcinoma Occurred in the Course of Pregnancy or Lactation and when Pregnancy Occurred Subsequent to Operation, 1910-1933, *Ann. Surg.* **106**: 690, 1937.

18. Taylor, G. W.: Carcinoma of the Breast in Young Women, *New England J. Med.* **215**: 1276, 1936.

19. de Cholnoky, T.: Mammary Cancer in Youth, *Surg., Gynec. & Obst.* **77**: 55, 1943.

of 73 cases in women under 30: The five year survival rate was 40.8 per cent. On the other hand, most observers are agreed that in the aged, carcinoma of the breast usually progresses more slowly and is therefore more amenable to surgical attack. With modern surgical methods women in the seventies and eighties stand operation well, and although common sense may limit somewhat the extent of the operation, it is from every point of view preferable to radiation in patients in whom the disease is locally operable.

In our study of operability, Dr. Stout and I also worked out the significance, in our data, not only of a whole series of single clinical signs of the local extent of carcinoma of the breast, but of combinations of these various clinical signs. It was found that very few patients who showed certain combinations of signs of advanced local disease were cured by radical mastectomy. For example, patients with even a limited amount of edema of the skin of the breast and solid fixation of the carcinoma to the chest wall were not cured.

From all of these correlations we drew up the following rule for judging operability in carcinoma of the breast: Women of all age groups who are in good enough general condition to run the risk of major surgery should be treated by radical mastectomy, except

TABLE 2.—Comparison of Results of Radical Mastectomy at the Massachusetts General Hospital

Period	Percentage of 5 Year Cures
1911-1914.....	27
1918-1920.....	30
1921-1923.....	35
1924-1926.....	41
1927-1929.....	43
1930-1932.....	44.8
1933-1935.....	50.4

as follows: (1) when the carcinoma is one which developed during pregnancy or lactation; (2) when extensive edema of the skin over the breast is present; (3) when satellite nodules are present in the skin over the breast; (4) when intercostal or parasternal tumor nodules are present; (5) when there is edema of the arm; (6) when proved supraclavicular metastases are present; (7) when the carcinoma is the inflammatory type; (8) when distant metastases are demonstrated; (9) when any two, or more, of the following signs of locally advanced carcinoma are present: (a) ulceration of the skin; (b) edema of the skin of limited extent (less than one third of the skin over the breast involved); (c) solid fixation of the tumor to the chest wall; (d) axillary lymph nodes measuring 2.5 cm., or more, in transverse diameter, and proved to contain metastases by biopsy, and (e) fixation of axillary lymph nodes to the skin or the deep structures of the axilla.

If these criteria had actually been followed in judging operability in the six hundred and forty radical mastectomies in our case series, a total of 109 of the patients would not have been operated on. Yet the number of patients permanently cured would not have been decreased by a single one.

We presented this rule for judging the operability of carcinoma of the breast not as an inflexible edict, but merely as a tentative guide drawn from the experience of what actually happened in the Presbyterian Hospital series of cases. It is a pragmatic rule which was true for our hospital during the past generation.

We are already inclined to modify its first provision regarding the treatment of the disease in pregnancy or lactation. We suspect, however, that the rule as a whole will hold fairly true in the future, because whenever we have violated it in deciding whether or not to perform radical mastectomy during recent years we have failed to cure the patient.

Wells²⁰ has applied our method of studying the correlation between clinical signs and end results to the data on carcinoma of the breast of the Hartford Hospital. His observations are almost identical with ours.

Portmann²¹ has also worked out a series of criteria for determining operability which have been helpful in deciding the choice of treatment at the Cleveland Clinic. Although his criteria are less specific than ours, they also recognize the importance of edema of the skin and of fixation of the tumor to the chest wall and the hopelessness of the inflammatory type of carcinoma.

At the Massachusetts General Hospital, Simmons and Taylor²² have given special attention to the proper selection of cases for operation, and have evolved the following rule:

Carcinoma of the breast is operable when the disease is confined to the breast, or to the breast and axilla. The primary tumor must be movable in relation to the chest wall, and must not present extensive skin involvement, skin metastasis, or the subepidermal infiltration known as "inflammatory" carcinoma. The axillary nodes must be movable in relation to the chest wall and great vessels, and these nodes must be few in number. There must be no evidence of disease in the supraclavicular areas or in the opposite axilla, nor metastatic disease in the lungs, pleura, liver, or skeleton.

The experience at the Massachusetts General Hospital is of special importance as illustrating the remarkable improvement in the results of radical mastectomy during the past generation that has resulted from more critical selection of cases for operation. When Greenough²³ began his study of the 1911 end results in cancer of the breast in that clinic he had the wisdom and foresight to draw up a well considered plan for classifying the cases and reporting the end results. This plan has been followed ever since at the Massachusetts General Hospital, with the result that the data on end results from this hospital, computed in a strict and uniform manner from 1911 to 1935, are the most complete and accurate available anywhere in the world.²⁴ The five year cure rates in this series of cases are shown in table 2.

Throughout all these years there has been no essential change in the technic of radical mastectomy at the Massachusetts General Hospital. Yet the rate of cure has almost doubled. Grantley Taylor, who carries on the work with carcinoma of the breast begun by Greenough and Simmons, stated²⁵: "We have narrowed our indications for operation very considerably and this

20. Wells, D. B.: Personal communication to the author.

21. Portmann, U. V.: Clinical and Pathologic Criteria as a Basis for Classifying Cases of Primary Cancer of the Breast, *Cleveland Clin. Quart.* 10: 41, 1943.

22. Simmons, C. C.; Taylor, G. W., and Welch, C. E.: Carcinoma of the Breast: End-Results; Massachusetts General Hospital 1930, 1931, and 1932, *Surg., Gynec. & Obst.* 69: 171, 1939.

23. Greenough, R. B., and Simmons, C. C.: End-Results in Cancer Cases: Cancer of the Breast, Boston M. & S. J. 185: 253, 1921.

24. (a) Simmons, Taylor and Wallace.²² (b) Simmons, Taylor and Welch.²² (c) Greenough and Simmons.²³ (d) Greenough, R. B.: Carcinoma of the Breast: Results of Treatment, 1918-1919-1920, *Am. J. Roentgenol.* 16: 439, 1926. (e) Greenough, R. B., and Taylor, G. W.: Cancer of the Breast: End-Results, Massachusetts General Hospital, 1921, 1922 and 1923, *New Eng. J. Med.* 193: 111, 1934. (f) Simmons, C. C.; Taylor, G. W., and Adams, H. D.: Cancer of the Breast: End-Results, Massachusetts General Hospital, 1927, 1928 and 1929, *ibid.* 213: 521, 1936. (g) Taylor, G. W., and Wallace, R. H.: Carcinoma of the Breast: End-Results, Massachusetts General Hospital, 1933-1935, *ibid.* 237: 475, 1947.

25. Taylor, G. W.: Personal communication to the author.

accounts largely for the apparent improvement in our end results.

It is understandable why the past generation of surgeons, in trying to find out what the newly devised operation of radical mastectomy could accomplish, operated on all patients irrespective of the stage of their disease. Today, however, enough has been learned about what can be accomplished with the operation to limit its use sharply. Careful selection of cases for radical mastectomy is not an indication of timidity on the part of the modern surgeon, but rather an index of the extent of his knowledge of carcinoma of the breast. The truth is that it is not only a waste of time and energy to perform radical mastectomy on patients whose disease is incurable; the operation probably spreads the disease and shortens life in these patients. This is a difficult point to prove statistically, but all surgeons who have operated on these far advanced cases have seen widespread generalized metastases develop soon afterward, just as if a shower of carcinoma emboli had been set free by the operation. This, of course, is what a surgeon should expect if his dissection is carried into or through carcinoma. The surgeon's knife is a double-edged sword that can do harm as well as good.

Any plan for the selection of patients for radical mastectomy should emphasize a careful preoperative search for distant metastases. This should include inquiry regarding back and leg pain signaling the presence of metastases in the spine or pelvis, and palpation of the supraclavicular areas, the opposite breast and axilla, and the liver. Roentgenograms should be made of the chest, and at least of the skull, the shoulder girdle, the entire spine, the pelvis and the upper part of the femurs. Every now and then distant metastases will be found by these methods, even though the primary carcinoma in the breast remains small and entirely operable. Radiation is, of course, the proper treatment for these patients.

RADICAL MASTECTOMY

The next step in improving the surgical attack on carcinoma of the breast is to popularize the *radical* mastectomy. This operation, devised independently by two American surgeons, Halsted and Willy Meyer,²⁶ a half century ago, has never been universally adopted. It is too extensive and tedious a dissection to win the approval of hasty or timid surgeons. The operation is not a difficult or dangerous one, but surgeons must believe in it to be willing to devote the time and energy that its performance demands, and there have been too many unbelievers.

Both Halsted and Willy Meyer changed and improved their technics as the operation evolved in their hands. They both soon came to emphasize four common principles: (1) excision of the skin over the whole breast, covering the defect which remains with a Thiersch graft when necessary; (2) excision of both pectoral muscles; (3) a complete axillary dissection, and (4) removal of the excised tissues in one block.

Since the operation is an extensive one, combining a series of related regional dissections, it is only natural that many different technics for it have been devised.

The adequacy of any special technic should be judged in terms of the fundamental attitude with which the surgeon plans and carries out his surgical attack. First of all, he must be unwilling to compromise by limiting his operation in any way, provided that his patient can

stand a radical operation. Every single carcinoma cell must be removed if cure is to be achieved, and a thoroughly radical operation offers the best chance of accomplishing this. Incomplete operations are unfortunately still widely done, and when they fail to cure, as they usually do, they discredit the surgical attack on the disease in the minds of both laymen and physicians.

The surgeon who performs radical mastectomy should know how to cut and how to manage thin skin flaps, as well as how to cover a defect on the chest wall with a skin graft. This ability frees him from the necessity of having to limit the amount of skin and subcutaneous tissue which he removes so that he can close the wound. He can disregard the problem of closure and think only of what needs to be sacrificed to cure the carcinoma. In some patients with large breasts skin grafting may not be required, but certainly when the breast is small and the patient herself not obese, a thoroughly radical operation will leave a defect on the chest wall which requires a skin graft.

There are still surgeons who do not sacrifice the pectoralis minor muscle, although it is anatomically impossible to carry out a complete axillary dissection unless the muscle is sacrificed. Both Greenough²⁷ and White²⁸ showed that when this muscle is spared the rate of cure is lower.

A second fundamental requirement of a surgeon who performs radical mastectomy is that he know how to operate gently and with good hemostasis. The late George Crile once classified surgeons as the *carnivorous* type who stretch, tear and crush the tissues, and the *herbivorous* type who dissect gently. There is no place where the latter type of technic pays better dividends than in radical mastectomy. In our microscopic studies we have often seen small emboli of carcinoma cells in the lymphatics of the breast and in the peripheral sinuses of lymph nodes. It is easily understood how such emboli can be set free by rough operating and escape into the venous blood stream or be implanted in the wound.

Great care should therefore be taken not to press on or squeeze the breast and to avoid traction on it. All manipulations should be as gentle as possible. Exact hemostasis is required because without it the surgeon loses sight of fascial planes and misses important anatomic landmarks. In the dissection of the axilla perfect hemostasis and sharp dissection with knife and forceps are necessary if all lymph nodes are to be removed and the task accomplished without crushing them and perhaps smearing carcinoma cells throughout the area. White²⁹ has recently reported an example of the implantation of carcinoma cells in the donor area of a skin graft on the leg, illustrating the ease with which carcinoma cells can be implanted.

There are of course a number of good technics for radical mastectomy based on the general principles which I have outlined. These have been evolved by the pupils of both Willy Meyer and Halsted. Halsted made a special effort to teach his residents to do the operation well. A number of them became heads of departments of surgery and their prestige helped to

27. Greenough, R. B.: Treatment of Malignant Diseases with Radium and X-Ray: Report of Committee on Treatment of Malignant Diseases with Radium and X-Ray of American College of Surgeons. *Surg., Gynec. & Obst.* 49: 253, 1929.

28. White, W. C.: Postoperative Roentgenotherapy in Cancer of the Breast. *Ann. Surg.* 105: 21, 1938.

29. Brandes, W. W.; White, W. C., and Sutton, J. B.: Accidental Transplantation of Cancer in the Operating Room, with a Case Report. *Surg., Gynec. & Obst.* 82: 212, 1946.

26. Cited by Haagensen.²¹

make the operation known. In Boston, J. C. Warren adopted Willy Meyer's version of the operation at an early date, modified its technic and passed on his interest in it to Greenough, who perfected the method that has been used at the Massachusetts General Hospital for a long period of years. Grantley Taylor³⁰ has published a complete description of the Greenough technic.

In our own surgical attack on carcinoma of the breast we have followed the principle that the disease is such a formidable enemy, even when apparently confined within operable limits, that it is our duty to make our dissection as radical as possible. By this we mean that we remove as much tissue from the chest wall and axilla as we dare, without unreasonable danger to the patient's life or interference with thoracic and arm function. I have recently described my technic,³¹ which is based on the Halsted operation but includes many details derived from the technic of the late George H. Semken, who was a pupil of the Willy Meyer school.

In my operation the skin incision is planned solely from the viewpoint of adequate local removal of the suspected tissues and not with any reference to closing the wound. We know that we can cover a defect of any size by skin grafting.

Our skin flaps are much thinner than in the usual radical mastectomy because we know that it is necessary to make them very thin if the inclusion of breast tissue is to be avoided. The breast is derived embryologically from the skin glands and lies only a few millimeters below its surface. Surgeons should not delude themselves that they are removing all the breast tissue in the operative specimen, if their skin flaps are a centimeter or more in thickness. Our skin flaps include only the skin itself, with its dermal glands and small blood vessels, and the thin layer of fat and areolar tissue lying above the superficial layer of the superficial fascia. The dissection elevates the skin flaps from this delicate fascial layer, leaving behind the large thin-walled blood vessels and their accompanying lymphatics, as well as the breast tissue, which lie below the fascia.

Another feature of our operation is that it is so planned as to avoid traction on the breast as it is being dissected from the chest wall or in the exposure of the axillary structures. As soon as the skin flaps have been dissected up and the attachment of the pectoralis major muscle to the arm and clavicle severed, this muscle together with the overlying breast and subcutaneous tissue is dissected off of the chest wall, beginning at the midline. The whole specimen is allowed to fall laterally of its own weight. No traction on it is required. The surgeon's access to the axilla is greatly facilitated by first removing the muscles and the breast from the chest wall. A thorough axillary dissection is more easily carried out.

In this axillary dissection we regularly sacrifice the subscapular vessels because this makes for a cleaner dissection of the subscapular region. In cases in which the axillary nodes are clinically involved we also sacrifice the thoracodorsal nerve, rather than to preserve it and dissect it out from among the subscapular lymph nodes.

We take great care not to use too much tension in closing the wound, because this leads to necrosis and poor wound healing, which in turn predispose to the

later development of edema of the arm. In the great majority of our cases a defect remains which we close with an immediate Thiersch graft.

Our operation requires about five hours to perform. With good anesthesia—we use "pentothal sodium" and nitrous oxide—and proper care in the avoidance of shock, this is a perfectly safe operating time.

We hasten to add that we have no final statistical proof that this ultraradical type of mastectomy gives a higher cure rate than other somewhat less radical technics. We are inclined to believe, however, that this kind of operation has some advantages as regards local recurrence.

VOGUE OF LOCAL MASTECTOMY

From time to time some doubting Thomas of a surgeon raises his voice in favor of local mastectomy as a substitute for radical mastectomy. The argument advanced is usually along the line that carcinoma of the breast that has metastasized to the axilla cannot be cured anyway and that mere removal of the breast will cure carcinoma limited to the mammary gland itself.

The fact that radical mastectomy does cure an appreciable proportion of patients who have axillary metastases should be apparent to any one. Taylor and Wallace³² in their latest (1933-1935) report of the end results in the Massachusetts General Hospital series stated that five year cures were obtained in 33.3 per cent of their patients with axillary involvement. About 60 per cent of all patients operated on have axillary metastases. The surgeon who does only a simple mastectomy wilfully forgoes the opportunity of five year cure in one third of these patients.

Worse than this is the fact that in the remaining 40 per cent of patients who do not have axillary metastases a simple mastectomy gives nowhere near as good a chance of cure as a radical mastectomy. In simple mastectomy the area of skin sacrificed is small, and the flaps are so thick that a good deal of mammary tissue which may harbor carcinoma remains on them. The pectoralis major muscle is not removed. This muscle, or the fascia overlying it, is frequently involved by carcinoma when the lesion is situated deeply in the breast.

Unfortunately, the vogue of simple mastectomy which might be expected to wane in time as the advantages of thorough surgery become more widely known, has recently received a strong impetus from the University of Edinburgh. In this academic circle with a long tradition of sound medicine and good surgery Dr. R. McWhirter³² has convinced his colleagues that simple mastectomy supplemented by postoperative radiotherapy gives results that are superior to radical mastectomy. His argument rests solely on the statistical evidence that the combination of simple mastectomy and radiotherapy has given a five year survival rate of 50.1 per cent, as compared with a survival rate of 44 per cent in an earlier series of cases in which treatment was by radical mastectomy alone. The weakness of his argument is apparent from the fact that in his series of cases in which treatment was by radical mastectomy alone the local recurrence rate was 39 per cent. We know that such a high local recurrence rate means either that the cases are improperly selected for operation or that an insufficiently radical operation has been done—or both. McWhirter has not given the modern thoroughly radical operation a fair chance: it can give a five year cure rate higher than his five year survival rate. Moreover, all that we know of the effects of radiation on carcinoma

30. Taylor, G. W., and Daland, E. M.: The Greenough Technique of Radical Mastectomy, *Surg., Gynec. & Obst.* 65: 807, 1937.

31. Haagensen, C. D.: A Technique for Radical Mastectomy, *Surgery* 19: 100, 1946.

32. McWhirter, R.: *Carcinoma of the Breast*, *Brit. M. J.* 2: 542, 1947.

of the breast convinces us that most patients treated by simple mastectomy and postoperative radiation who survive will harbor viable carcinoma locked up in fibrosis, which eventually will reappear locally.

BILATERAL CARCINOMA OF THE BREAST

The development of carcinoma in the second breast following a successful operation for carcinoma in one breast is a manifestation of the disease which requires special mention, if for no other reason than to emphasize the fact that this is not as unfavorable a complication as might be supposed. We have seen a fair number of patients cured of their second carcinoma of the breast. Harrington,³³ who has reported the largest series of cases of bilateral disease, unfortunately failed to include survival rates following operation on the second breast, but he did state that the results may be very satisfactory. McWilliams³⁴ collected instances of bilateral carcinoma of the breast and worked out a five year survival rate of 21.1 per cent following the operation on the second breast. When both breasts are involved simultaneously the prognosis is much poorer.

In McWilliams' series 32 per cent of the patients had their second tumor within a year after the first one. There can be no assurance, however, that the disease may not develop in the second breast at any time during the remaining life span of the patient; Harrington recorded 1 case in which twenty-eight years elapsed between the two carcinomas. In the follow-up examinations of patients who have had carcinoma in one breast it is important always to examine the opposite breast with care, no matter how long a time has gone by since the disease originally appeared.

McWilliams calculated that in 5 per cent of women who get carcinoma of the breast it develops in both breasts, the disease occurring consecutively in 4.7 per cent and simultaneously in 0.2 per cent. Our own impression is that the incidence of involvement of the second breast will be found to increase as the thoroughness of the follow-up improves, and that it approximates 10 per cent. Perhaps half of these cases are examples of secondary involvement of the opposite breast late in the course of the disease in patients in whom the operation on the side originally involved failed to eradicate the disease locally. The internal mammary lymphatic pathway becomes blocked by metastases, and retrograde permeation of the lymphatics crossing the midline carries the carcinoma into the second breast. This is a regular event in carcinoma *en cuirasse*.

The important thing from the surgeon's point of view is to know whether the carcinoma in the second breast is a metastasis or local extension from the carcinoma in the first breast, or whether it is an entirely new carcinoma. If it is the former, cure is impossible and palliative radiation only should be given; if it is the latter, a second radical mastectomy is indicated. This question is sometimes difficult to decide. The best guide is the absence of local recurrence on the operated side and of distant metastases. If these evidences are not found it is more than likely that the second carcinoma is a new one: at least it should be treated as such.

LOCAL RECURRENCE

Comparison of the results of radical mastectomy in different clinics in terms of the cure rates is hardly worth while, because of the variations in the com-

pleteness of follow-up and in the statistical methods used. One surgeon reports five year survivals, not knowing how many of his patients have recurrence or metastases, while another reports five year clinical cures, including only those patients who he knows have been well since operation. One surgeon in determining his survival rate arbitrarily excludes from his compilation a large group of what he calls "indeterminate" cases, amounting to 30 per cent of his total number of primary cases, and calculates his survival rate only on the remaining 70 per cent. This, of course, gives him a favorable survival rate as compared with that of the surgeon who follows the statistical method recommended by the League of Nations Cancer Commission³⁵ and does not deduct a single case from the total number treated, every patient whose treatment was incomplete, or who died of intercurrent disease, or who was lost track of being counted as a failure. The League of Nations Commission to which I refer was a group of gynecologists who in 1929 drew up a comprehensive plan for the classification of the different forms of uterine cancer and laid down strict standards for the computation of the end results. This statistical method has been generally adopted in all the large gynecologic cancer clinics in Europe and America with the result that today truly comparable data regarding the different methods of treatment of uterine cancer are available. There is a great need of transposing these same methods for use in reporting the results of the treatment of carcinoma of the breast.

In weighing the results of radical mastectomy it might be argued that the surgeon cannot be held responsible for failure when the patient succumbs to distant metastases which gave no evidence of being present before operation. Our present methods of clinical investigation are simply not good enough to detect these latent distant metastases which are the cause of death in the overwhelming majority of patients who are not cured by radical mastectomy. In most of these unfortunate patients metastasis probably takes place some time before they come for treatment, rather than during operation. The surgeon innocently goes ahead with futile radical mastectomy because he has no way of knowing that the disease has already spread far beyond his reach.

The surgeon certainly is accountable, however, for local recurrence in the field of operation—that is, on the chest wall or in the axilla. Reappearance of the carcinoma here means either that he wrongly chose to operate, for radical mastectomy should not be attempted when the local disease is beyond cure, or that he did an inadequate operation.

Sometimes the former factor and sometimes the latter factor explains the high incidence of local recurrence. Rienhoff has stated that in Halsted's time, and indeed for long afterward at Johns Hopkins Hospital, no attempt to select operable cases was made—all were operated on. This is no doubt the main reason why Halsted's local recurrence rate was 31.9 per cent. Rienhoff³⁶ in 1932 reported that in a further series of cases at the Johns Hopkins Hospital the local recurrence rate rose to 39.7 per cent when the operative technic was changed only to the extent of removing less skin to allow plastic closure of the wound. Here the second

Survival Rates of Radical Mastectomy for carcinoma of the Breast, Surgery 19: 154, 1946.
Bilateral Mammary Cancer Operations: Ultimate Cases, Ann. Surg. 82: 63, 1925.

35. Cancer Commission: Report Submitted by the Radiological Sub-Commission, Geneva, Switzerland, League of Nations, Health Organization, 1929, p. 14.

36. Lewis, D., and Rienhoff, W. F., Jr.: A Study of the Results of Operation for the Cure of Cancer of the Breast, Ann. Surg. 95: 336, 1932.

factor of a less radical operation would appear to have played a part.

Since Halsted's day a beginning attempt to select curable cases for operation has cut down the incidence of local recurrence somewhat in many clinics. Yet it has been our personal experience from studying the end results of radical mastectomy in the records of several hospitals that the more complete the follow-up data the higher the local recurrence rate will be found to be and that it is usually found to be distressingly high unless rigorous criteria of operability are followed in selecting the cases for operation. In the Presbyterian Hospital¹⁴ series of cases (1915-34) in which no definite plan of selection was followed, the local recurrence rate was 22.8 per cent. White,³⁷ who has been specially interested in the problem of local recurrence, reported an almost identical local recurrence rate of 22.6 per cent at the Roosevelt Hospital.

The surgeons who have succeeded in reducing the local recurrence rate materially below this level have accomplished it by strict selection of their cases for operation, aided to some extent by the thoroughness of their operative attack. Taylor and Wallace^{21c} at the Massachusetts General Hospital, where well defined criteria of operability have been developed, report local recurrence in 11 per cent of the cases in their latest (1933-35) study of end results. In my personal series of cases at the Presbyterian Hospital in which careful selection has been made of cases for operation on the basis of the criteria listed, and most of the operations performed by the resident surgeons, there was local recurrence in 12.5 per cent of the patients.

In tabulating the incidence of local recurrence in our series of cases we have been careful to include every case in which the disease reappeared in any form on the chest wall or in the axilla on the operated side. The distressing parasternal recurrences, which appear from the depths of the intercostal spaces close to the sternal edge and grow outward forming a firm poorly circumscribed mass beneath the skin, are included. These are not skin recurrences at all, but apparently develop from carcinoma emboli in the intercostal lymphatics at the point where they perforate the chest-wall accompanying the perforating vessels, or as the result of retrograde growth of metastases in the internal mammary lymph nodes. If this is the correct explanation of this type of local recurrence the thoroughness of the operation can have little bearing on its frequency, for no surgeon attempts to excise the intercostal tissues. In patients with such carcinoma emboli in lymphatics running in fascial planes and accompanying vessels at the periphery of the operative field it would seem logical to expect that some of the emboli would have escaped beyond the operative field. Clinical experience supports this supposition, for patients in whom these parasternal recurrences develop invariably prove to have distant metastases.

The surgeon may not be blamable for parasternal recurrences, but he cannot escape responsibility for the button-like recurrent skin nodules which are apt to appear along the scar line when an inadequate area of skin is removed. These develop, beyond all doubt, from carcinoma cells implanted by the surgeon's instruments as he manipulates or sutures the edges of the wound. The cases in which such recurrences appear are usually ones in which it is apparent that the operation was not truly a radical mastectomy at all, but a

sort of glorified local excision of the carcinoma. This kind of surgery is reminiscent of the surgical methods in Billroth's time, seventy-five years ago. He had 82 per cent of local recurrences.

The great majority of local recurrences appear within the first three years after operation, and a patient who reaches the five year mark is fairly safe from this hazard. In rare instances local recurrence appears many years after operation: Woolsey³⁸ collected reports of a series of such late local recurrences including 1 instance in which the disease recurred locally after twenty-five years.

PALLIATION WITH RADIOTHERAPY

When the surgeon decides, after careful study of his patient, that her carcinoma of the breast is locally inoperable he may send her to a radiotherapist for palliative radiation. With suitable treatment the local lesion can be controlled for a varying period of time—in many instances until the distant metastases get beyond control. Lenz³⁹ has been treating inoperable carcinomas of the breast with ever increasing amounts of roentgen rays, and has achieved striking palliation with these larger doses. The tumor of the breast is treated through five portals, and receives a tumor dose of 6,000 r or more. The axillary nodes receive a similar dose through three portals. Such large amounts of radiation can be administered safely only in small daily doses of 100 r to each of two or three fields. Ten patients among a total of 31 that Lenz has treated by this method have survived from seven to ten years. The morbidity of this therapy is considerable, and Lenz has emphasized that it should be reserved for inoperable cases, surgery being preferable in operable cases.

Carcinoma of the breast metastasizes very widely. In Warren and Witham's⁴⁰ series of 162 autopsies in cases of carcinoma of the breast there were only 8 cases in which metastases were not found, while in each of the remainder an average of five organs or tissues were involved. The sites of metastasis in their relative order of frequency were:

Distant lymph nodes.....	116
Lung	94
Liver	88
Bone	69
Skin	61
Pleura	56
Adrenal gland	50
Spleen	23
Peritoneum	21

Radiation is useless in some of these forms of metastatic carcinoma of the breast, particularly those in the abdominal viscera—the liver, spleen and peritoneum. Irradiation of widespread pulmonary metastases is not worth while, but if the metastases are limited to one relatively small area in the periphery of one lobe where a tumor dose of as much as 2,000 r can be given, temporary palliation may be obtained. In pleural metastasis temporary palliation occasionally results. Metastatic carcinoma in the brain or spinal cord, as Lenz and Freid pointed out, is usually secondary to advanced involvement of the skull or vertebrae, and at this stage radiation is of little help. Metastatic nodules in the skin usually regress promptly with adequate radiation. The disease can be held in check in the supraclavicular lymph nodes in most cases. The distressing symptoms

38. Woolsey, G.: Late Recurrence After Radical Operation for Carcinoma of the Breast, *Ann. Surg.* 80: 932, 1924.

39. Lenz, M.: Tissue Dosage in Roentgentherapy of Mammary Cancer, *Acta radiol.*, to be published.

40. Warren, S., and Witham, E. M.: Studies on Tumor Metastasis: The Distribution of Metastases in Cancer of the Breast, *Surg., Gynec. & Obst.* 57: 81, 1933.

37. White, W. C.: The Problem of Local Recurrence After Radical Mastectomy for Carcinoma, *Surgery* 19: 149, 1946.

due to increased mediastinal pressure from metastases in mediastinal lymph nodes can be relieved temporarily.

Radiation finds its greatest usefulness in palliation of the pain caused by metastases in bone. The control of this symptom is one of the most important problems in carcinoma of the breast, for these lesions in bone often progress slowly and cause great distress.

The lumbar vertebrae and pelvic bones are the commonest sites of bone metastasis, perhaps because in these bones the wide sinusoids of the marrow spaces are a good harbor for emboli in the blood stream. Lenz and Freid⁴¹ reported the anatomic distribution of the bone metastases in 81 autopsied cases as follows:

Site	Percentage of Cases
Pelvic bones	62
Ilium	37
Ischium	58
Pubis	56
Spine	50
Cervical	13
Dorsal	40
Lumbar	57
Sacral	38
Femur	54
Ribs	39
Skull	35
Humerus	27
Scapula	16
Clavicle	14
Tibia	3
Sternum, radius, ulna, fibula, bones of the hands and feet each	1

Pain in the back or pain radiating down the thigh in a patient who has had carcinoma of the breast should at once suggest the presence of metastases in the spine or pelvic bones. The pain is at first not severe and is usually felt when the patient gets up from bed or from a chair, or when she jars her spine as in missing her step. For a while she continues to be perfectly comfortable when she lies quietly in bed. The discomfort on motion steadily increases, however, until the patient finds it impossible to get about.

The pain caused by these metastases in the vertebrae is probably due, at least in the beginning, to increased pressure or tension on the periosteum of the vertebrae rather than to direct involvement of the posterior nerve roots themselves. The pain is referred to the segment of the trunk or leg corresponding to the particular posterior roots which supply the periosteum of the involved bones. Thus metastases in the lumbar vertebrae may cause pain radiating down the leg in the distribution of the sciatic nerve.

For some inexplicable reason bone metastases are painless in certain few patients. Their bones may be riddled with disease before its existence is discovered, sometimes as the result of a pathologic fracture.

In a good many instances local tenderness develops over bones containing metastases. This is particularly true of rib metastases. Sensitiveness to sharp percussion is often present over involved vertebrae.

Pain is an indication for roentgen examination of the skeleton in a patient who has had carcinoma of the breast. If the clinical observations are sufficiently suggestive roentgen treatment should be started, even though the roentgen examination fails to show definite metastases. Patients with metastasis have often been condemned to suffer for months because clinicians relied on the roentgen observations rather than on sound clinical judgment. The difficulty of distinguishing early roentgenographic changes due to metastases from those of arthritis is too great to give the roentgen evidence

much weight. Moreover, as Lenz and Freid⁴¹ have pointed out, pain may precede the demonstrable roentgen changes by as long as twelve months.

In the great majority of patients with bone metastases roentgen treatment gives definite relief of pain. In some the relief lasts only a few months, but in others it may last two or three years, the patient being restored to a relatively normal life meanwhile. Since further radiation is eventually required in most cases it is wise to give only a moderate amount the first time. Of course when only one small area is involved, as for instance a single vertebra, a larger dose is justified.

The bone lesions thus treated show a varying degree of sclerosis. When the metastasis is limited to a single collapsed vertebra it may calcify in a truly remarkable way. Pathologic fracture of long bones, however, usually do not unite.

It is important to give the bone lesions rest and support during radiation and for some time following the completion of the treatment, in order to give an opportunity for fibrosis and recalcification. With metastasis in the spine this is best achieved with bed rest for a month or so and the wearing of a brace for a time afterward. Unfortunately many patients have to drag themselves in and out of the clinic as outpatients while receiving their radiation because they cannot afford hospitalization.

HORMONAL PALLIATION

The last few years have seen the evolution of a new method of influencing the course of carcinoma of the breast by changing the hormonal balance in the patient.

It was begun by the Glasgow surgeon Beatson.⁴² The observation that mammary function is dependent on ovarian influences both in animals and human beings prompted him in 1896 to try the effects of oophorectomy in women with cancer of the breast. He was impressed by occasional striking palliation from the procedure.

The operation was taken up by several English surgeons, with the result that by 1905 Mr. H. Lett⁴³ was able to collect reports of results in 99 inoperable cases of carcinoma of the breast. Seventy-five of these patients were under 50 years of age. In this group 29.3 per cent were reported to have shown considerable though temporary improvement, chiefly of superficial lesions.

Beatson himself, reporting his further experiences with the operation in 1911,⁴⁴ was less enthusiastic. He had narrowed the indications for the operation down to a comparatively small group of patients who had not reached the menopause and whose disease was not acute. In these the favorable effects were temporary and chiefly concerned cutaneous and subcutaneous nodules.

The majority of surgeons remained unconvinced of the value of oophorectomy in carcinoma of the breast, and in the enthusiasm for radiation treatment which came onto the scene during the next decade, Beatson's operation was given up.

The idea was revived again in the early 1920's by Wintz at Erlangen and by Ahlbom in Stockholm, who suppressed ovarian function by irradiation. Wintz⁴⁵

42. Beatson, G. T.: On the Treatment of Inoperable Cases of Carcinoma of the Mamma, *Lancet* 2: 104 and 162, 1896.

43. Lett, H.: An Analysis of Ninety-Nine Cases of Inoperable Carcinoma of the Breast Treated by Oophorectomy, *Lancet* 1: 227, 1905.

44. Beatson, G. T.: The Treatment of Inoperable Carcinoma of the Female Mamma, *Glasgow M. J.* 76: 81, 1911.

45. Wintz, H.: Die Röntgenbehandlung des Mammakarzinoms, in Meyer, H.: *Lehrbuch der Strahlentherapie*, Berlin, Urban & Schwarzenberg, 1929, vol. 4.

41. Lenz, M., and Freid, J. R.: Metastases to the Skeleton, Brain and Spinal Cord from Cancer of the Breast and the Effect of Radiotherapy, *Ann. Surg.* 93: 278, 1931.

claimed good results, but Ahlbom⁴⁶ was unable to find any definite proof of the value of the treatment when he surveyed his results in 1930. The method was taken up in Boston by Dresser,⁴⁷ and case series begun both at the Pondville State Hospital and at the Collis P. Huntington Memorial Hospital. Grantley Taylor⁴⁸ has recently reviewed the experience and concluded that artificial menopause induced by radiation in patients with inoperable or recurrent carcinoma of the breast has a definite palliative effect in about one third. Bone metastases respond best. In a series of 47 cases of operable carcinoma of the breast in younger women, in whom artificial menopause was induced as a prophylactic measure, Taylor found no increase in the survival rate.

In the meanwhile a good deal of experimental evidence has accumulated showing the complexity of the relationships of hormones to carcinoma of the breast.⁴⁹ The administration of certain ovarian and testicular hormones for carcinoma of the breast has recently been tried extensively. Adair and Herrmann⁵⁰ reported highly favorable results with large doses of testosterone propionate. In interpreting these effects it must be kept in mind that the administration of large doses of androgen suppresses ovarian function in a manner somewhat comparable to castration by surgery or radiation. Estrogens were given therapeutically by a number of English physicians who, in 1944, reported striking palliation in occasional patients. Nathanson has recently described similar results, emphasizing that the favorable effects are limited to old women; in younger women the hormone stimulates carcinoma of the breast.

Enough time has not yet gone by to permit critical evaluation of the usefulness of this new hormonal therapy. Its indiscriminate use is doing a good deal of harm. The disadvantages of androgen therapy in women have not been stressed. Physicians should realize that doses of 100 mg. given intramuscularly twice a week, as have been recommended, will lower the pitch of the voice, produce a profuse growth of hair on the face, coarsen the skin and change the facial expression, and produce disturbing erotic symptoms. It is also worth mentioning that testosterone propionate is a very expensive product.

Although androgen treatment will relieve pain due to bone metastases in at least one third of the patients, and will make most of them feel better generally, in the great majority of cases it has little or no effect on the progress of the bone lesions themselves. In patients having maximal doses of androgen continuously for more than a year and who did not receive any radiation treatment for the bone metastases, we have watched the steady growth of the areas of bone destruction, although the patients were free of pain. We have not seen any benefit to visceral metastases from androgen treatment.

These facts have led us to prefer radiation to androgen treatment whenever the bone lesions are sufficiently localized to make radiation practicable. It is a surer method of temporarily checking the progress of the bone

lesions, and it has fewer unpleasant concomitant effects. We reserve the androgen treatment for patients in whom radiation has failed or in whom the bone metastases are generalized.

SUMMARY

Carcinoma of the breast remains the most important cancer problem, not only because it is by far the most frequent form of cancer, but because it is one of the most favorable types of the disease when promptly diagnosed and well treated. Radiation has failed to cure, although it remains an important means of palliation. When cases have been selected according to proper criteria of operability more than 50 per cent of five year cures can be obtained.

Efforts should be concentrated on educating women to detect their own tumors of the breast and to go promptly to a physician, and in educating physicians to use the knowledge we have available today in a way that will provide the best possible diagnosis and treatment.

Clinical Notes, Suggestions and New Instruments

AQUEOUS PENICILLIN THERAPY FOR PNEUMOCOCCIC PNEUMONIA

Injectations at Twelve Hour Intervals

ALISON HOWE PRICE, M.D.
Philadelphia

The custom of injecting aqueous solution of penicillin intramuscularly or intravenously, or of giving it orally, at short intervals of three or four hours is based on the fact that the amount of penicillin in the blood rises and falls rapidly after its administration. It is believed that closely spaced dosage is necessary to maintain a constant bacteriostatic or bactericidal amount of penicillin in the blood to control infection. To avoid the need for rapidly repeated injections, which cause discomfort, disturb sleep and burden the nursing service, methods of injecting penicillin in various slowly absorbed matrixes were developed with the view to providing a continuous slow release of penicillin into the blood and the maintenance of a constant large amount therein. Unfortunately, injections of this kind often cause pain, unpleasant reactions and at times sterile abscesses and are costly.

It is questionable whether the amount of penicillin in the blood is of more importance than the amount in the tissues and interstitial fluid in the control of pneumococcic pneumonia. The latter would seem to be more essential. Penicillin accumulates in large amount in the lungs of dogs.¹ The amount of penicillin in tissue is, of course, dependent on the amount carried to it by the blood, but it is reasonable to assume that the amount in the tissues rises more slowly and persists longer. The retention of penicillin in tissue or tissue fluids after a single injection is indicated by its excretion in the urine long after the amount in the blood has become so low that it can no longer be demonstrated.² Based on this reasoning, experimental therapy was conducted in patients with pneumococcic pneumonia by injecting penicillin in aqueous solution, intramuscularly or intravenously, in amount of 200,000 units as an initial dose and 100,000 units every twelve hours.

Between September 1945 and September 1947, 65 patients with lobar pneumonia (table 1) were treated with aqueous penicillin injected twice daily. Up to March 1946, of 36 patients, 16 were treated in the customary manner with 25,000 units every three or four hours, and 20 received the larger

46. Ahlbom, H.: Castration by Roentgen Rays as an Auxiliary Treatment in the Radiotherapy of Cancer Mammæ at Radiumhemmet, Stockholm, Acta radiol. 2: 614, 1930.

47. Dresser, R.: Effect of Ovarian Irradiation on the Bone Metastases of Cancer of the Breast, Am. J. Roentgenol. 35: 384, 1936.

48. Taylor, G. W.: Evolution of Ovarian Sterilization for Breast Cancer, Surg., Gynec. & Obst. 68: 452, 1939.

49. Nathanson, I. T.: The Relationship of Hormones to Diseases of the Breast, In Twombly, G. H., and Pack, G. T.: Endocrinology of Neoplastic Diseases, New York, Oxford University Press, 1947, p. 138.

50. Adair, F. E., and Herrmann, J. B.: The Use of Testosterone Propionate in the Treatment of Advanced Carcinoma of the Breast, Ann. Surg. 122: 1023, 1946.

From the Jefferson Medical College and Hospital, Philadelphia.

1. Struble, G. C., and Bellows, J. G.: Studies on the Distribution of Penicillin in the Eye, J. A. M. A. 125: 685 (July 8) 1944.

2. Abraham, E. P., and others: Further Observations on Penicillin, Lancet 2: 177, 1941.

injections twice a day. After this time all patients with pneumococci infections admitted to the ward service were treated twice daily, with an initial intravenous injection of 200,000 units of penicillin in aqueous solution and 100,000 or 200,000 units intramuscularly every twelve hours. The clinical response was as favorable in the 65 patients treated only twice daily as in patients treated at short intervals.

The temperature usually fell to normal after twenty hours of therapy; there were no relapses or focal localizations. However, 1 patient presented a large sterile pleural effusion. The mortality rate in these unselected patients, as compared with a group treated every four hours during the day but given no penicillin during the night,³ is shown in table 2.

TABLE 1.—Summary of Data: Distribution of Patients, Type Pneumococcus, Number of Lobes Involved and Deaths

Type of Pneumococcus	No. of Patients	No. of Lobes Involved			Deaths
		1	2	3	
I.....	7	5	2	0	..
II.....	10	8	2	0	..
III.....	13	10	3	0	1
IV.....	3	3	0	0	..
V.....	2	2	0	0	..
VII.....	6	4	2	0	..
VIII.....	3	3	0	0	..
Other types.....	15	12	3	0	2
Unclassified.....	6	6	0	0	..
	65	53	12	0	3

TABLE 2.—Mortality Rate of Present Series Compared with Patients Treated Every Three Hours During the Day and Given No Penicillin During the Night

	No. of Patients	Deaths	Percentage
Present series.....	65	3	4.6
Tillett, McCormack and Cambier ⁴	110	8	7.2

CONCLUSION

Patients with pneumococci pneumonia who received injections twice daily with large doses of penicillin in aqueous solution responded as favorably to treatment as those receiving the same total dosage given at more frequent intervals. Injections at twelve hour intervals have the advantage of permitting undisturbed sleep, fewer needle pricks and a saving of nursing time. Aqueous solution of penicillin causes fewer unpleasant reactions, is less difficult to administer and is less expensive than penicillin specially prepared for slow absorption.

3. Tillett, W. S.; McCormack, J. E., and Cambier, M. J.: The Treatment of Lobar Pneumonia with Penicillin, J. Clin. Investigation 24: 589, 1945.

"The Royal Disease."—During the last ten years several scientists (Gunn, and Haldane, etc.) have tried to trace back to its origin the abnormal gene exhibited in the Russian and the Spanish royal families, and in several other princely families in Europe. As far as existing evidence is conclusive, Queen Victoria of England was the first carrier of the morbid gene. Ten of Victoria's male descendants have suffered from hemophilia and seven of her female descendants have been proved to be carriers of the gene. . . . The question arises from where and how Queen Victoria acquired the fateful gene of hemophilia. A definite answer to this question will be difficult if not impossible. . . . Haldane suggests an alternative possibility that the gene for hemophilia may have originated by mutation in Queen Victoria herself. Such instances of spontaneous mutation are well known in animals and plants, and Haldane is convinced that the hemophilia locus mutates rather frequently in human beings.—Hugo Iltis, Mendel Museum, Fredericksburg, Va., *The Journal of Heredity*, April 1948.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, Secretary.

ACOUSTICON HEARING AID, MODEL A-100, ACCEPTABLE

Manufacturer: Dictograph Products, Inc., 580 Fifth Avenue, New York 19.

The Acousticon Model A-100 is an "all-in-one" wearable hearing aid. The case contains microphone, amplifier and batteries. A radio pickup, provided as an accessory, plugs in along one side of the case. Without this attachment, the outside dimensions of the instrument are 122 by 64 by 22 mm. (4 13/16 by 2 1/2 by 7/8 inches) exclusive of the clothing clip. A wheel type on-off switch combined with gain control is at the top near one corner. The off position is marked, but has no snap to indicate off by touch. The four position slide tone control is located at one edge close to the same corner as the gain control. The receiver cord inserts at the top of the instrument.



Acousticon Model A-100

The lower half of the back opens to expose the battery compartment. The A battery is of the mercury type; the B battery is a 22.5 volt zinc-carbon type. The power consumption of the A battery, 1.3 volts, is 40 milliamperes, and the drain of the B battery, 22.5 volts at volume control three-fourths on, is 0.85 milli-ampere. With batteries, but without cord, receiver and radio attachment, the instrument weighs 213 Gm. (7 1/2 ounces); with the radio attachment it weighs 243 Gm. (8 1/2 ounces).

The following data were obtained in a performance test by an independent laboratory:

Subject	Acoustic Gain	Articulation Scores			Difference
		Acousticon Model A-100	Reference Instrument		
A	41 db.	77%	80%	—3%	
B	41 db.	45%	65%	—20%	
C	47 db.				

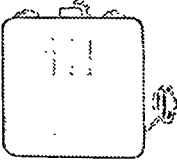
One of the other receivers of the Acousticon line might have given a better articulation score for this subject, but the complete line of receivers was not available for test. Furthermore, it was impractical to test this subject with all possible combinations of receivers, tone control settings and microphones. There are nine different receivers available.

The acoustic gain was found to meet the Council's published minimum requirements. Some of the volunteer subjects were especially interested in the radio attachment.

The Council on Physical Medicine voted to include the Acousticon Hearing Aid, Model A-100, in its list of accepted devices.

SUPER-FONIC HEARING AID ACCEPTABLE

Manufacturer: American Sound Products, Inc., 2454 S. Michigan Avenue, Chicago 16.



Super-Fonic Hearing Aid.

The Super-Fonic Hearing Aid is a plastic-cased, self contained hearing aid, with the battery compartment at the lower end of the case. A bottom-hinged full height back cover gives access to the batteries and another plastic case enclosing the amplifier. Either of two brush-crystal type receivers can be used, each with a plastic-covered cord for connections to the amplifier.

Two wheel type control knobs are placed at the top of the case. One is a volume regulator, and the other a four position tone selector, one position being "off." The design of the case for pocket size eliminates the need of a clothing clip.

The dimensions are 73 by 70 by 32 mm. (2¾ by 2¾ by 1¼ inches) and the weight is 170 Gm. (6 ounces). The A battery is of the mercury type, 1.3 volts, and the B battery of the zinc-carbon type, 30 volts. The A battery drain is 60 milliamperes and the B battery is 0.36 milliampere when quiet, 0.55 milliampere when the instrument is "squealing."

Acoustical Gain.—Measurements were made of the acoustical gain in decibels (sound pressure in 2 cc. coupler in decibels above sound pressure at microphone with microphone set in 40 by 40 cm. baffle) with the input level held at 0.02 dyne per sq. cm.

The following tabulations give the results in decibels for the large receiver, with volume control full on, for two settings of the tone control at each of seven different frequencies:

Frequency	256	512	1,024	2,048	2,250	3,100	4,096
Tone, 1 dot.....	38	49	64	49	51	50	47
Tone, 3 dots.....	30	41	56	33	35	29	25

For the small receiver, with the volume control full on, the following results in decibels were obtained:

Frequency	256	512	1,024	1,800	2,250	3,100	4,096
Tone, 1 dot.....	26	42	45	55	48	49	37

Below are approximate values of maximum sound pressure levels, at three frequencies, set up in the 2 cc. coupler with volume set for full gain and tone setting at one dot:

Frequency	Input Level	Maximum Output Level
600 cycles	60 db.	110 db.
1,024 cycles	65 db.	123 db.
2,048 cycles	60 db.	104 db.

Intelligibility tests (random words) were made with a person of normal hearing seated inside a booth giving about 30 decibels in sound reduction. The speaking person was outside the booth using a normal speaking voice. Score made under these conditions was 30 per cent.

The Council on Physical Medicine voted to include the Super-Fonic Hearing Aid in its list of accepted devices.

The acoustical gain for speech was measured with the help of two hard of hearing persons, each an experienced user of hearing aids. These subjects had about 60 decibels loss of hearing for speech, and the impairment was predominantly of the middle ear type, which obtains best results with hearing aids. Each was studied in a sound-proof room with a high quality sound amplification system (speech audiometer), and the performance with the hearing aid was compared with the performance without. The difference, the wide range tone control being used, was 50 decibels. (This amount of gain cannot be anticipated by persons with inner ear impairments).

The Council on Physical Medicine voted to include the Telex Model 97 Hearing Aid in its list of accepted devices.

AUREX HEARING AID, MODEL F, ACCEPTABLE

Manufacturer: Aurex Corporation, 1117 North Franklin Street, Chicago 10.

This is a plastic-cased, self-contained hearing aid, with the battery compartment at the lower half of the case. A snap cover gives access to the batteries. The crystal receiver has the Aurex trademark and is connected to the amplifier by a plastic covered cord (plugs at both ends).

One sliding type control on the side of the case serves as a switch and volume control. A rotary fan-type shutter may be turned from the center of the grill to close the microphone openings and serves as a partial tone control.

Aurex Model F Hearing Aid.

Dimensions and Weight

Dimensions: 130 by 60 by 22 mm. (5¼ by 2¾ by ¾ inch).
Weight: Approximately 198 Gm. (7 ounces).

	Voltage	Current
A 1½ volts	1.4 volts	40 milliamperes
B 22½ volts (Quiet)...	22 volts	0.4 milliampere
(Squealing)...	22 volts	0.5 milliampere

Acoustical Gain

Measurements were made of the acoustical gain of the instrument in decibels. This is the decibel difference in sound pressure between the pressure at the face of the microphone opening (with instrument set in 16 by 8 inch, 40.6 by 20.3 cm., baffle) and the sound pressure produced by the receiver in a 2 cc. coupler. The microphone sound pressure was held at a level of 40 decibels over 0.0002 dyne per square centimeter. Typical results, obtained with the volume control full on, for two settings of the tone control at each of seven different frequencies, are here tabulated:

Frequencies	256	512	1,024	1,200	2,250	3,100	4,096 cycles
Tone-Control							
Shutter open	50	58	61	69	57	52	40 db.
Shutter closed	45	55	56	62	42	43	33 db.

Maximum Output Pressure

Measurements were made of the approximate maximum sound pressure the instrument would produce in the 2 cc. coupler with the instrument set for full gain and with shutters open. Levels are in decibels relative to 0.0002 dyne per square centimeter.

Frequency	Input Level	Maximum Output Level
600 cycles	55 db.	110 db.
1,024 cycles	60 db.	117 db.
1,200 cycles	60 db.	120 db.
2,048 cycles	55 db.	102 db.

Intelligibility Tests

Intelligibility tests (random words) were made with a person of normal hearing seated inside a booth giving about a 30 decibel sound reduction. The speaking person was outside the booth

TELEX MODEL No. 97 HEARING AID ACCEPTABLE

Manufacturer: Telex, Inc., Telex Park, Minneapolis 1, Minnesota.

The Telex Model 97 is a three tube air-conduction hearing aid with the batteries contained in the amplifier case. The case is constructed of flesh-colored plastic material. A side-hinged full length back cover gives access to the battery compartments and tubes. The magnetic type receiver is connected to the top of the amplifier case by means of a light plastic-covered cord which has dual pin plugs at each end.

A single wheel type control is at the top of the case and is set at right angles to the long axis of the case. This control is a combination of "on-off" switch and volume control. Alongside this control is a two position tone control lever or switch; position 1 gives wide range response and position 2 gives attenuated low frequency response. An attachment clip is fastened to the back of the amplifier case.

With batteries, the instrument weighed 174 Gm. (6¼ ounces); it measured 111 by 59 by 23 mm. (4¾ by 2¼ by 2⅜ inches). For the A battery it requires a 1.3 volt mercury type of cell; the B battery, of the zinc-carbon type, is 22½ volts. The power consumption was measured in an independent laboratory and was found to be 48 milliamperes for the A battery at 1.25 volts and 0.36 milliampere for the B battery at 21 volts.

Acoustical gains were also measured at six frequencies and two positions of the tone control, with the volume control set for maximum gain. The results are here tabulated:

	Frequencies					
Tone Control	250	500	1,000	2,000	3,000	4,000 cycles
Position 1.....	48	52	56	52	51	25 db.
Position 2.....	35	43	61	50	61	25 db.

using a normal tone of voice. The score made under these critical conditions was 62 per cent.

The Council on Physical Medicine voted to include the Aurex Hearing Aid, Model F, in its list of accepted devices.

NATIONAL HEARING AIDS STANDARD MODEL (T), STAR MODEL (S) AND CUB MODEL (C) ACCEPTABLE

Manufacturer: National Hearing Aid Laboratories, 815 South Hill Street, Los Angeles 14.

These three hearing aids are all self-contained metal-cased instruments with a battery compartment in the lower half of the case. The crystal receiver connects by a 2-conductor cord with plugs at both ends. There are two wheel-type controls on top of the case. One is the volume control; the other is a combination switch and tone control. Wearing clips on the front of the case are placed to keep the microphone opening above the edge of the pocket.

Specimens of the Standard, Star, and Cub models were investigated in a laboratory acceptable to the Council.

STANDARD MODEL HEARING AID (T)

The Standard model is the largest made by the firm. The battery compartment in the lower half of the case has a hinged cover for access.

The dimensions are 125 by 33 by 65 mm. (5 by 1¼ by 2½ inches) and the weight is 237 Gm. (8½ ounces). The A battery is of the zinc-carbon type, 1½ volts, and the B battery of the zinc-carbon type, 22½ volts. The A battery drain is 40 milliamperes and the B battery is 0.4 milliamperes when quiet and 0.2 milliamperes when the instrument is "squealing."

Acoustical Gain.—Measurements were made of the acoustical gain in decibels. This is the decibel difference between the sound pressure at the face of the microphone of the instrument and the pressure produced by the receiver in the 2 cc. coupler. The pressure at the face of the microphone was held at approximately 55 decibels above zero for these measurements (55 decibels above 0.0002 dyne per square centimeters).

Typical acoustical gains in decibels are given in the following tabulation:

Volume	Tone	Frequencies						
		256	512	1,024	1,200	2,250	3,100	4,096
Full	1-dot	27	38	54	57	42	42	28
Full	2-dots	23	32	48	48	27	23	12

Maximum Output Pressure.—Below are approximate values of maximum sound pressure levels (at four frequencies) set up in the 2 cc. coupler with the volume set for full gain and tone setting 1 dot.

Frequency	Input Level	Maximum Output Level
600 cycles	75 db.	120 db.
1,024 cycles	85 db.	130 db.
1,200 cycles	85 db.	131 db.
2,048 cycles	85 db.	117 db.

Intelligibility Tests.—Intelligibility tests were made with a person of normal hearing seated inside a booth giving a sound reduction of about 30 decibels. The speaking person was outside the booth using normal speaking voice. Score made with the Harvard No. 9 lists under these critical conditions was 73 per cent.

STAR MODEL HEARING AID (S)

This instrument, tube combination 11 A, is represented by Model S. The battery compartment in the lower half of the case is covered by a leather band for access.

The dimensions are 120 by 33 by 65 mm. (4¾ by 1¼ by 2½ inches) and the weight is 265 Gm. (9½ ounces). The A battery is of the zinc-carbon type, 1½ volts, and the B battery

of the zinc-carbon type, 22½ volts. The A battery drain is 40 milliamperes and the B battery is 0.6 milliamperes when quiet and 0.4 milliamperes when the instrument is "squealing."

Acoustical Gain.—Measurements were made of the acoustical gain in decibels by the technique described for A.

Typical acoustical gains in decibels are given in the following tabulation:

Volume	Tone	Frequencies						
		256	512	1,024	1,200	2,250	3,100	4,096
Full	1-dot	31	36	59	62	50	38	36
Full	3-dots	25	31	51	48	29	17	15

Maximum Output Pressure.—Below are approximate values of maximum sound pressure levels (at four frequencies) set up in the 2 cc. coupler with the volume set for full gain and tone setting 1 dot.

Frequency	Input Level	Maximum Output Level
600 cycles	80 db.	124 db.
1,024 cycles	75 db.	132 db.
1,200 cycles	75 db.	131 db.
2,048 cycles	85 db.	120 db.

Intelligibility Tests.—Intelligibility tests were made with a person of normal hearing seated inside a booth giving a sound reduction of about 30 decibels. The speaking person was outside the booth using normal speaking voice. Score made with the Harvard No. 9 lists under these critical conditions was 73 per cent.

CUB MODEL HEARING AID (C)

The Cub Model is the smallest of the three hearing aids submitted by the firm. The battery compartment in the lower half of the case has a hinged cover for access.

The dimensions are 102 by 33 by 65 mm. (4 by 1¼ by 2½ inches) and the weight is 190 Gm. (6¾ ounces). The A battery is of the zinc-carbon type, 1½ volts, and the B battery of the zinc-carbon type, 22½ volts. The A battery drain is 40 milliamperes and the B battery is 0.5 milliamperes when quiet and 0.3 milliamperes when the instrument is "squealing."

Acoustical Gain.—Measurements were made of the acoustical gain in decibels by the technique described for A.

Typical acoustical gains in decibels are given in the following tabulation:

Volume	Tone	Frequencies						
		256	512	1,024	1,200	2,250	3,100	4,096
Full	1-dot	31	44	53	53	33	33	28
Full	3-dots	25	34	46	45	22	17	13

Maximum Output Pressure.—The following are approximate values of maximum sound pressure levels (at four frequencies) set up in the 2 cc. coupler with the volume set for full gain and tone setting 1 dot.

Frequency	Input Level	Maximum Output Level
600 cycles	75 db.	121 db.
1,024 cycles	85 db.	131 db.
1,200 cycles	85 db.	131 db.
2,048 cycles	85 db.	115 db.

Intelligibility Tests.—Intelligibility tests were made with a person of normal hearing seated inside a booth giving sound reduction of about 30 decibels. The speaking person was outside the booth using normal speaking voice. Score made with the Harvard No. 9 lists under these critical conditions was 55 per cent.

The National Hearing Aid Laboratories provide for use by salesmen a device called the Selector-Tester. When the hearing aid is fitted this equipment may be used, although a trial of a week is considered by the Council as a more accurate method of selecting a satisfactory hearing aid.

The Council on Physical Medicine voted to include National Hearing Aids Standard Model (T), Star Model (S) and the Cub Model (C) in its list of accepted devices.

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SATURDAY, SEPTEMBER 25, 1948

DOCTORS FOR THE ARMY

The medical departments of our armed forces, and particularly the Army, confront a crisis. The new Selective Service Act has established a peacetime army and air force at approximately five times the size of the prewar military establishment. Estimates indicate that they must have 4,000 more doctors by June 1949. However, possible economies may diminish this need slightly. None of the physicians needed is obligated by any existing law to volunteer or to serve in the armed forces. The special need of the armed forces, as pointed out by Surgeon General R. W. Bliss in this issue of *THE JOURNAL*, is its requirement for specialists. Today in many of our leading Army hospitals abroad young men who have hardly had an adequate residency are in full charge of medical, surgical, obstetrical and other highly specialized departments.

The House of Delegates of the American Medical Association established the Council on National Emergency Medical Service as a body to be especially concerned with meeting the needs of the nation for physicians in times of emergency. War today is total war. The needs of civilian populations and particularly of great industries, which are the backbone of war, must also be considered. Nevertheless, the men who do the actual fighting, who fly the planes, who get the foods and supplies up to the front and who carry the banner of the United States all over the world must have the highest possible quality of medical service in order to keep fit and efficient. The provision of the best medical care to our armed forces is one of the most economical steps that the nation can undertake. It lessens the total demand for men, and it maintains the morale and the spirit of the men more than any other single factor involved in modern war.

The Council on National Emergency Medical Service, the procurement divisions of our armed forces, the headquarters of the Army and Navy and Air Force have all been desperately concerned during the last few months with meeting the nation's need. Every

possible approach to the problem has been considered. Now that compulsory service for physicians has been denied by the Congress, the needs must be met by other technics. Obviously the first step is to make the service more and more attractive to the young men so as to encourage volunteering by greater and greater numbers. A recent somewhat casual survey of the young men now in the service who will be leaving at the end of two years of service indicates that the following factors must be given consideration in attracting them for longer periods:

1. The service must be sufficiently varied so that the deadly routine of day by day dispensary service of many months does not destroy the young man's initiative.

2. At least one half of the young men now in the armed forces want ultimately to qualify for certification by some specialty board. Some means must be found whereby service in military installations can be reckoned as a part of the young man's development leading toward certification.

3. Except in the most remote areas young men may be kept in contact with some of the best teachers in American medicine. Already a steady stream of qualified consultants is visiting our Army hospitals throughout the world, and the men who are taking charge of the services in these hospitals are having more opportunity for extended contact with the leaders in the various medical specialties than most of the men who remain in the United States. All that appears to be needed is some arrangement for the development of a systematic course of instruction rather than casual ward walks.

Thus most of the objections can be met by competent planning. While the young men prefer to be rotated from one service to another at fairly frequent intervals, several difficulties have developed in this regard. First is the housing of young men, many of whom are married and are already en route to the development of families. One colonel in charge of a hospital of many hundreds of beds in Germany said that there would be no problem for the Army medical department if all the young doctors would remain bachelors until they had completed their military service. The housing of young physicians and their families, as can easily be seen, is one of the most difficult of the problems that confront the armed forces.

It has been suggested that increased pay in the armed forces for men as highly specialized as are physicians and engineers would attract more young men to the service. Actual first hand surveys indicate, however, that the money, while interesting, is not a primary consideration.

A specific provision in the Selective Service Act states that a man may not be inducted into the armed

forces until provision has been made for adequate medical care. That was the intent of the Congress. There is no reason to believe that the Congress will withdraw from that intent. There is actually reason to believe that the Congress will make that intent fully effective by some type of compulsory selection of young physicians unless these young men come forward to fulfil their obligation as citizens and particularly as physicians. They are not being asked to do any more than is being asked of any other person in our population.

The world is trembling on the edge of a great third war. Many of our leaders in history and economics are convinced that such a war might well mean the end of civilization as we now know it. One needs only to see the dreadful devastation that prevails in London, Belgium, Rotterdam, Frankfurt and Berlin to realize that every American must be ready to give of his utmost now that the call is here and thus to keep away such horrible destruction from our own shores. Only those who have actually seen at first hand whole square miles of devastation in London, Berlin, Rotterdam and other great capitals of the world can comprehend the threat. The profession of medicine places on the young men who choose it as a career a great responsibility. They are not asked to venture their lives in war to the same extent as are other young men in the population. They are asked instead to put other young men into the best possible condition to meet the need and to salvage the human wreckage so far as possible when war actually begins. The medical profession of the United States has a record enviable beyond that of any other medical profession in the world for what it has accomplished when the nation called. Let us realize that now we can no longer wait until the enemy is at the gate. The time to prepare is in advance of the struggle, and the call has come.

MR. EWING'S TEN YEAR HEALTH PROGRAM

The National Health Assembly apparently has culminated in a book called "The Nation's Health: A Ten-Year Program," obtainable for \$1 from the Superintendent of Documents in Washington. As any one with knowledge of the background could have predicted, the report is devoted largely to arguments in support of a government health insurance program, principally emphasis on the alleged parlous state of the health of the American people. The answers to the nation's health problem developed by the Ewing report include, first, more doctors, dentists, nurses and other auxiliary med-

ical personnel; second, the addition of 600,000 hospital beds by 1960, and, third, a nationwide compulsory sickness insurance plan. Here are the same old figures that the proponents of government medicine have been launching at periodic intervals for the last twenty or thirty years. Some of them are requoted in a Washington Letter in this issue of *THE JOURNAL*. These undocumented statistics would be ignored if they were not being used in such a desperate, final gasp by the Federal Security Agency.

In an interview to the press on September 2, President Truman supported the Ewing program, saying that he is compelled to advocate national health insurance because he sees no other possible way of bringing medical service to fully half the American people. Just how hard has the administration tried to see some other way? Just whom have they called upon to help them look?

Recently the general assembly of the World Medical Association met in Geneva with a considerable number of nations of the world represented. Reports were received on conditions related to medical care in more than twenty nations. The amount and quality of medical care given to most people of the world under their compulsory sickness insurance plans would never satisfy the people of the United States. The inevitable faults of these systems, which have been emphasized to the American physicians and to the American people for a good many years, are now coming vividly to light. Great Britain embarked on its new National Health Act on July 5. People in England may now go to the doctor without calculating the cost of the service. They may be supplied with spectacles and teeth without additional costs. They may have consultants and beds in hospitals without reference to individual payments for services rendered. That is what the National Health Act of Great Britain promised them. Do you think that they get it? No, indeed! They queue up to see the doctors whom formerly they could have seen by appointment. Doctors are compelled to write formulas and prescriptions and reports many hours in advance of the time when they see the patients because otherwise they would never have time to see the patients. Many a physician is already satisfied that he cannot work under the Act. The unfortunate public have no way of knowing whether or not what they get is good medical service or something to make them think that they are being given attention. The greatest folly in the world is the manner in which Great Britain embarked on a nationwide health service without hospitals, doctors, nurses, drugs or money to supply what they promised, and an even greater folly would be the attempt to offer a similar service in the United States and to gulp the

entire medical problem of the nation in a single swallow. Should the United States accept the prescription by President Truman and his consultant, Mr. Ewing, it would likely discover that the prescription had little of curative value and a great deal of the ultimate effect of ipecac or apomorphine (these, Mr. Ewing, are classified by the books on drugs as emetics).

Current Comment

TIME FOR DECISION

Many issues confront the voters of the United States in the election that will occur in November. Most Americans so value their democratic prerogatives that they sincerely attempt by their ballots to influence the policies of their government. As is explained in an editorial in this issue of *THE JOURNAL*, President Truman is committed to a nationwide system of compulsory sickness insurance. Governor Thomas E. Dewey has stated over his signature and in a public address to the Oregon State Medical Society that he is unalterably opposed to a government system of medical practice. In the United States legislation is the ultimate responsibility of the Congress. Those who feel strongly in behalf of certain policies or opposed to them must be equally concerned, therefore, not only with the election of a president but also with the election of senators and congressmen who will support the president. Regardless of what the proponents of compulsory sickness insurance may say, the health of the nation is not in a critical condition. In fact, the people of the United States are more healthy than those of any other country of the world. The quality of medical service available to the vast majority is superior to that anywhere else in the world.

SEX LIFE IN PRISON

Karpman¹ calls attention to the prevalence of abnormal sex practices in prisons. The more normally constituted prisoner with a short sentence may succeed, at least temporarily, in maintaining his heterosexuality. Sooner or later, self control breaks down and the prisoner is confronted with the choice of some abnormal sexual practice. The ease with which one succumbs to the practice of masturbation varies greatly, some going through an acute emotional conflict before they finally yield and some, who are never able to succumb, developing neurotic or psychotic reactions. Karpman believes that much of the prison rioting may be traceable to sex problems. If the practice of masturbation and homosexuality continues, it becomes fixed, and even on discharge from confinement a person often finds himself unable to return to normal sex activities. Young men, of whose heterosexuality there was no previous doubt, after confinement for several years become con-

firmed homosexuals, taking on feminine characteristics on discharge and becoming homosexual prostitutes with consequent demoralization of younger elements whom they initiate. Prison authorities thus far have used only violent suppression to control sex, and the method does not seem to have the intended effect. The various suppressions engender hatred and defiance which still further stabilize the reaction. Karpman believes that abnormal sexual practices in prisons have probably not decreased. A person who has served even a brief sentence and has yielded to abnormal sex practices can be considered on discharge from prison as abnormal; if before confinement he was heterosexual, his term in prison incapacitates him for normal sex adjustment. As a remedial measure within the prison, Karpman believes that provision for more normal sex outlets would help correct these practices. He expresses the hope that when hospitals take the place of prisons, the abnormal sex practices of prisoners will disappear.

OUTBREAKS OF DISEASE FROM CONTAMINATED FOOD

The United States Public Health Service has just released a compilation of disease outbreaks in 1946 conveyed through foods other than milk and milk products. The 299 outbreaks of disease from contaminated food incapacitated 12,526 persons, 17 of whom died. The food was usually contaminated through unsanitary conditions or infection of food handlers; also early and adequate refrigeration was lacking. From 1938 through 1946, outbreaks traced to foods have been nearly six times as numerous as those traced to water or milk. During the war years, food-borne diseases increased, while disease outbreaks attributed to water and milk declined. The economic loss from milk-borne diseases alone has been estimated as at least \$3,000,000 a year. Sanitary standards for eating and drinking establishments developed by the Public Health Service have been adopted in local areas throughout the country containing over 60,000,000 persons. These standards are now in effect statewide in 17 states and the District of Columbia and in 186 counties and 451 municipalities in 40 states and territories. To help states and local communities organize classes for employees in food establishments, a pamphlet, "Guide to Safe Food Service," may be obtained by addressing the Sanitary Engineering Division, Public Health Service, 4218 Federal Security Building South, Washington, D. C.

INDEX NUMBER

In this issue of *THE JOURNAL* appears the Index for Volume 137 of *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* covering May, June, July and August. This Index should have appeared in *THE JOURNAL* of August 28, but it was impossible to publish it at that time. The Index is paged to follow immediately the material that ended Volume 137 and may be bound with that volume so as to make it complete.

1. Karpman, B.: Sex Life in Prison; *J. of Crim. Law and Criminol.* 38: 475-486 (Jan.-Feb.) 1948.

ORGANIZATION SECTION

1868

Will C. Braun

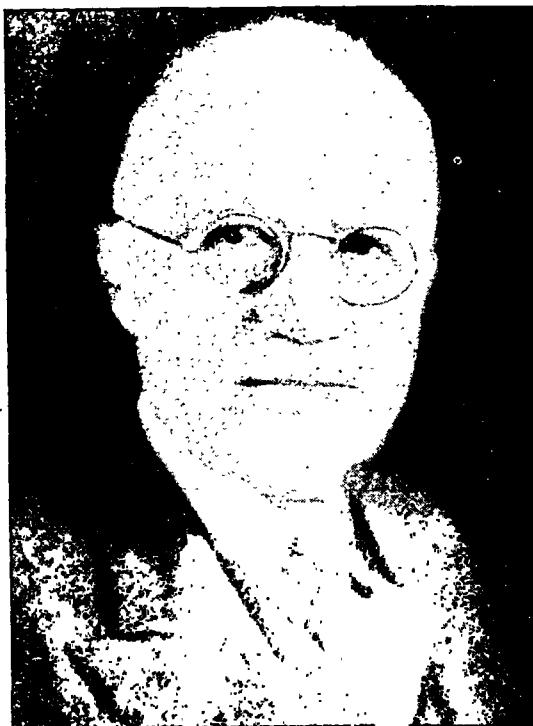
1948

Great organizations and great institutions reflect the lives and earnestness of great men. When the ultimate history of the growth of the American Medical Association is written, among the names that will loom largest along with those of Drs. Nathan Smith Davis and George Henry Simmons, editor and general manager of the Association, will be that of Mr. Will C. Braun, first business and circulation manager.

Will Braun died Sunday, Sept. 12, 1948, at the age of 80 years. He had devoted 56 of those 80 years to the work of the American Medical Association, and he brought to that work a canny mind and a whole-hearted sincerity. Will Braun was born in Ripley, Ohio, on Aug. 24, 1868. In November 1891 Mr. Braun, who had been clerking in a general store in Ripley, Ohio, came to Chicago in search of greater opportunity. The American Medical Association offered him a job as subscription solicitor and all-around office helper. At that time Dr. J. C. Culbertson was editor and manager of *THE JOURNAL*. The headquarters space was a room about 30 by 60 feet, occupied by a staff of two men, two women, some typesetters and a proofreader. The office was marked off from the rest of the area by a wood railing. In 1892, at just about the time he had worked up a good revenue by selling subscriptions and advertising space on a commission basis, *THE JOURNAL* got a new editor, Dr. John B. Hamilton. Will Braun thought that this would terminate his employment, but Dr. Hamilton put him on a regular salary, and the business began to expand.

Mr. Braun was continually in process of urging Dr. George H. Simmons to greater development and expansion of the headquarters office.

From 1902 to 1942 there were seven remodelings and rebuildings. These were associated with a continuous growth in the circulation of *THE JOURNAL*, from 3,500 in 1891 to more than 100,000 in 1941 and to a total today, at the time of Will Braun's death, of more than 140,000 copies weekly. The handful of employees has increased to more than 800. Much of this tremendous development is a direct result of the genius of Will Braun in advertising. In the



course of his work he made numerous friends among the great leaders of the American industries allied to medicine. Some of the original contracts which he developed have been continued without intermission since that time. In 1946 he became Business Manager Emeritus and was succeeded by Mr. Thomas R. Gardiner, who had been associated with him as first assistant for many years. At that time his friends and associates tendered him a magnificent banquet at the meeting in San Francisco.

The impetus given to the growth of the American Medical Association by Dr. Nathan

Smith Davis, Dr. George H. Simmons and Will C. Braun was so powerful that it remained for their successors simply to hold the forward surge firmly to the goal. The quality of the many publications of the Association, their uniformly high standards of advertising and their conspicuous success, are an indication of the type of support given by the business administration to the Board of Trustees and the editors. That policy was recognized by Will Braun as fundamental toward continued progress in medical publications, and it made him proud and happy at the time of his death to see the ideals and the effort behind them bear such abundant fruit.

Official Notes

DR. HAROLD R. HENNESSY APPOINTED SECRETARY TO COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

Dr. Harold R. Hennessy, Winnetka, Ill., formerly a resident of California and since early 1946 associated with the Council on Industrial Health, has recently been appointed Secretary to the Council on National Emergency Medical Service. Dr. James C. Sargent, Milwaukee, is Chairman of the Council, which was formed in 1947 to coordinate efforts of the American Medical Association involved in the mobilization of our nation's armed forces, industry, agriculture and civilian population in time of a national emergency.

Dr. Hennessy, a graduate of the University of Minnesota Medical School in 1930, practiced for a number of years in Southern California. A medical reserve officer for many years, Dr. Hennessy now holds the rank of colonel. During the war he was assigned to the office of the Surgeon, Ninth Service Command, later attending the School of Military Government, University of Virginia, Charlottesville. Overseas for two years, he was assigned to the G-5 Staff of the Communication Zone and later to the Fifteenth United States Army, where he served in the office of the Surgeon.

Washington Letter

(From a Special Correspondent)

Sept. 15, 1948.

Truman Indorses Ewing's 10 Year Health Program

At his first September press conference, whose date (September 2) coincided with White House release of Federal Security Administrator Oscar R. Ewing's ten year health plan for the nation, President Truman discussed and gave hearty indorsement to the report. It is in the form of a 186 page book, which the Federal Security Agency has begun distributing among state and local public health departments, state medical and dental societies, delegates to the National Health Assembly held here last May, voluntary associations in the health and medical field and certain other agencies. As a public document, the paper-bound book is for sale by Superintendent of Documents, Government Printing Office, Washington 25, D. C. The price is \$1. Its title is "The Nation's Health: A Ten-Year Program."

Nearly one third of the report is devoted to argument in support of government health insurance and exposition of alleged inadequacies of voluntary medical care and hospitalization plans. However, institution of compulsory insurance by the federal government is placed third on Mr. Ewing's priority list. His first goal is to increase medical manpower—physicians, dentists, nurses and their auxiliaries; his second, expansion of the country's hospital system so that at least 600,000 beds are added by 1960.

Other goals, in their order of mention: increased emphasis on mental health; reduction of the toll taken by chronic and degenerative diseases; complete rehabilitation of the physically handicapped; improvement of maternal and child health services; joint planning by professional and citizens' groups at community level to raise public health standards and, finally, establishment of more local public health departments with full time staffs.

Following are some of the statements made in the Ewing report:

"By and large, only the well-to-do and, to a certain extent, charity patients get satisfactory medical care. The in-between groups—other than the fairly small portion who are covered by voluntary insurance plans—are the ones desperately in need of better care."

"Every year 325,000 people die whom we have the knowledge and the skills to save."

"We have only 80 per cent as many physicians as we need and even greater shortages of other medical personnel."

"We have only about 50 per cent as many acceptable hospital beds as we require."

"A scant 20 per cent of our people are able to afford all the medical care they need."

"Only about half the families in the United States can afford even a moderately comprehensive health insurance plan, on a voluntary basis. The net result, then, would be to leave without adequate protection the very groups—those with incomes below \$3,000—whose plight the Nation needs most to remedy in order to raise the country's level of health."

"The compelling argument . . . that drives me to an advocacy of national health insurance is that I see no other possible way of bringing adequate medical service to fully half of the American people. It would, obviously, be nice if we could find some other way that would arouse less opposition from many members of the medical profession. But I see none."

Congressman Lauds World Health Assembly

Skeptical at the outset but now a supporter of the World Health Organization, Representative Ivor D. Fenton expressed his views in a statement in the *Congressional Record* for August 17 (page A5414). The Pennsylvania Republican, who is a physician, attended the first World Health Organization meeting in Geneva as a Congressional advisor to the United States delegation.

"When I accepted appointment to the U. S. delegation I was somewhat skeptical," said Dr. Fenton. "Now I can only give my strongest assurance that in the World Health Organization we have an unusual, perhaps a unique, opportunity to promote the general welfare of mankind and to improve the world economy, as well as increase our own protection against importation of disease."

Navy Forms Council on Radiobiologic Research

A Council on Radiobiologic Research within the Bureau of Medicine and Surgery, Navy Department, has been established by Rear Admiral Swanson, the Surgeon General. Among its responsibilities will be to review all proposed research project in radiation biology, diagnosis and therapy of radiation sickness internal radiation hazards and methods of photographic dosimetry and personnel decontamination. Serving on the Council whose first meeting is tentatively scheduled for October 12, will be representatives of the Office of Naval Research, the Armed Forces Special Weapons Project and the Atomic Energy Commission, as well as heads of divisions in the Bureau of Medicine and Surgery dealing with atomic defense and research.

Priority Buying of War Surplus by Hospitals Ended

As of September 1, priority and preference buying of war surplus supplies, equipment and miscellaneous materials by non-profit hospitals and educational institutions came to an end. Under the program conducted by the War Assets Administration, "millions of dollars worth of war surplus hospital equipment, including beds, surgical and medical equipment, drugs, medicines, dressings and furnishings went to public health institutions throughout the nation," said Jess Larson, War Assets Administration head. He added that donation of surplus property to eligible health and educational institutions will be continued, explaining that this is a disposal method rather than a priority.

Dr. J. T. Edsall Elected to Chemical Society Post

Dr. John T. Edsall, associate professor of biochemistry at Harvard Medical School, was elected chairman of the American Chemical Society's Division of Biological Chemistry at the annual meeting of the society in Washington which ended September 3. Jules D. Porsche, of Armour and Company, was elected vice chairman. Elected secretary to succeed Dr. Edsall was Dr. Paul W. Preisler, assistant professor of biochemistry at Washington University School of Medicine.

Marine Hospital Heads Will Meet September 24-27

Administrators of the twenty-four marine hospitals operated by the U. S. Public Health Service, together with heads of the service's four largest outpatient clinics, will hold their annual conference here September 24-27 at the call of Dr. Otis L. Anderson, head of the Public Health Service Hospital Division. Problems encountered during the past year will be reviewed and measures for improvement of services discussed. At present the twenty-four hospitals' combined patient load is about 6,000.

GOVERNMENT SERVICES

NAVY

NAVY INTERNS IN CIVILIAN INSTITUTIONS

The first group of young medical officers in the reserve corps have reported to the approved hospitals indicated below for active duty as interns under the new medical training program. These officers, all lieutenants (jg), are graduates of class A medical schools and, on completion of their internship, will remain on active duty in the Navy for at least one year.

McAlpin H. Arnold, Elberton, Ga., to Union Memorial Hospital, Baltimore.

William H. Brown, Newburgh, N. J., to City Hospital, Welfare Island, N. Y.

James A. Christensen, Seattle, to Providence Hospital, Seattle.

Roy Daugherty, San Antonio, Texas, to General Hospital, Kansas City, Mo.

Robert Edwards, Lawrence, Kan., to the Kansas Medical Center, Kansas City, Kan.

John W. E. Fries, St. Louis, to St. Louis County Hospital, Clayton, Mo.

George R. Hanson, Nampa, Idaho, to St. Luke's Hospital, Denver.

Ignatius P. Hanzly, Lackawanna, N. Y., to Mercy Hospital, Buffalo.

Harry E. Howard, Monroe, Mich., to Indianapolis General Hospital, Indianapolis.

Andrew G. Hudacek, Plymouth, Pa., to Reading Hospital, Reading, Pa.

John W. Jaes, Coats, Kan., to Indianapolis General Hospital, Indianapolis.

John M. Kenelly Jr., Hillsboro, Ore., to Clallinger Municipal Hospital, Washington, D. C.

Charles E. Kerrick, Parma, Idaho, to Creighton Memorial St. Joseph's Hospital, Omaha.

Ralph A. Kilby, Buffalo, to Hospital of St. Barnabas for Women and Children, Newark, N. J.

Frank A. Kopecky Jr., Omaha, to Creighton Memorial St. Joseph's Hospital, Omaha.

Stephen C. Leograndes, Framingham, Mass., to Cooper Hospital, Camden, N. J.

Robert E. Lewis, Oakmont, Pa., to University of Pittsburgh Medical Center Hospitals, Pittsburgh.

Harry C. Lockard Jr., Bedford, Va., to Charity Hospital of Louisiana, New Orleans.

Leo B. McGinty, Huron, S. D., to Creighton Memorial St. Joseph's Hospital, Omaha.

Donald J. Madden, Los Angeles, to Creighton Memorial St. Joseph's Hospital, Omaha.

Dean M. Miller, Abilene, Kan., to Kansas City General Hospital, Kansas City, Mo.

Harlan L. Papenuss, Winona, Minn., to Creighton Memorial St. Joseph's Hospital, Omaha.

Dwaine J. Peetz, Sidney, Neb., to Creighton Memorial St. Joseph's Hospital, Omaha.

Louis H. Porter, II, Austin, Texas, to Kansas City General Hospital, Kansas City, Mo.

Louis J. Prendergast, Fonda, Iowa, to Creighton Memorial St. Joseph's Hospital, Omaha.

Fred W. Richardson, Laconia, N. H., to Beverly Hospital, Beverly, Mass.

Hubert A. Ritter, St. Charles, Mo., to St. Mary's Group of Hospitals of St. Louis University, St. Louis.

Eugene J. Schmitt, Rochester, N. Y., to St. Mary's Hospital, Rochester, N. Y.

Clarence T. Thompson, Baton Rouge, La., to Charity Hospital of Louisiana, New Orleans.

James W. Vildibill Jr., Columbia, S. C., to Charity Hospital of Louisiana, New Orleans.

RESERVE OFFICERS RECALLED

The following reserve medical officers have been recalled to active duty: Capt. Stephen M. Smith of Danbury, Conn., to the Naval Hospital, Bethesda, Md.; Comdr. Sydney L. Williams, Flushing, N. Y., to the New York Naval Shipyard, Brooklyn; Lieut. Comdr. Charles N. Scott, Smithfield, W. Va., to the Naval Air Station, Willow Grove, Pa., as Station Keeper; Lieut. (jg) Harold W. Garvin, Mascoutah, Ill., to a residency in obstetrics and gynecology at the Naval Hospital, Great Lakes, Ill.

DR. ALVAREZ OPENS SERIES OF GUEST LECTURES

The first of the current series of guest lectures sponsored by the National Naval Medical Center, Bethesda, Md., was opened September 24 when Dr. Walter C. Alvarez spoke on "Puzzling Functional Disorders." The meetings are open to members of local medical societies and faculties, medical students and Army, Navy and Public Health and Veterans Administration medical officers.

AWARDS AND COMMENDATIONS

Lieutenant Frederick E. Wetzel

Lieut. Frederick E. Wetzel, M. C., has been authorized by the Navy Department to wear the Presidential Unit Citation ribbon with star by virtue of his service in the First Marine Division, which division was awarded the Presidential Unit Citation by the President of the United States. This citation of the division was as follows:

For extraordinary heroism in action against enemy Japanese forces at Peleliu and Ngesebus from September 15 to 29, 1944. Landing over a treacherous coral reef against hostile mortar and artillery fire, the First Marine Division, Reinforced, seized a narrow, heavily mined beachhead and advanced foot by foot in the face of relentless enfilade fire through rain, forests, and mangrove swamps toward the air strip, the key to the enemy defenses of the Southern Palau. Opposed all by thoroughly disciplined, veteran Japanese troops heavily entrenched in caves and in reinforced concrete pillboxes which honeycombed the high ground throughout the island, the officers and men of the division fought with undiminished spirit and courage despite heavy losses, exhausting heat and difficult terrain, seizing and holding a highly strategic air and land base for future operations in the Western Pacific. By their individual acts of heroism, their aggressiveness and their fortitude, the men of the First Marine Division, Reinforced, upheld the highest traditions of the United States Naval Service.

AIR FORCE

COURSES IN AVIATION MEDICINE

The Air Surgeon announces a thirty-seven week course to begin September 20 at Randolph Air Force Base, San Antonio, Texas, and open to civilian physicians who apply and are accepted for integration in the Regular Army and duty with the Air Force, to medical reserve officers on active duty who have applied for integration in the Regular Army, and to Regular Army medical officers. The course will provide instruction in care of the flyer, internal medicine, ophthalmology, naso-

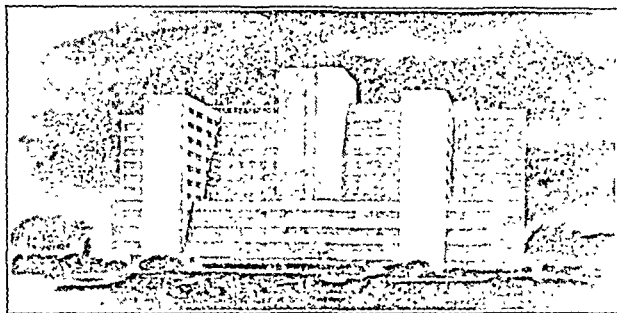
pharyngeal radium irradiation, biophysics, physiology, pathology, surgery and other subjects.

In addition a six-week aviation medical examiner's course will begin November 1 at this air base, open to civilian physicians who are members of the Air National Guard and the Air Force Reserve. Completion of this course and duty with the National Guard or reserve units will make physicians eligible for designation as flight surgeons. Application for admission to either of the courses should be made to The Chief of Staff, United States Air Force, Office of The Air Surgeon, Washington 25, D. C.

VETERANS ADMINISTRATION

NEW HOSPITAL AT OMAHA

Ground was broken June 24 for the new 500 bed Veterans Hospital to be erected on the Field Club site in Omaha. The projected cost, including administrative and contract expendi-



New Veterans Hospital at Omaha.

tures, will be about \$11,321,800. The possible completion date is March 1, 1950. The project is under the supervision of the Omaha District Engineer Office of the Army Corps of Engineers.

DIRECTOR OF HOSPITALIZATION APPOINTED

The Veterans Administration announces the appointment of Dr. E. B. Quarles, formerly associate director at Barnes Hospital, St. Louis, as director of the Veterans Administration Hospitalization and Requirements Service. He is a graduate of the Medical College of Virginia, interned at Nassau Hospital, Mineola, N. Y., and at the Essex County isolation hospital, Belleville, N. J., and then engaged in industrial and general medical practice at America, Ala. He served with the Medical Corps of the Army during World War II.

OLD GUARDHOUSE BECOMES MEDICAL LABORATORY

The old guardhouse at Fort Logan, Colo., dating back to the founding of the fort in 1887, has been transformed into a modern medical research laboratory of the Veterans Administration and will be available to physicians and scientists of the Rocky Mountain Region. At the dedication of the laboratory recently among the speakers were Dr. J. E. Wallin, chairman, Rocky Mountain Section, Society for Experimental Biology and Medicine; Dr. Ward Darley, dean, University of Colorado Medical School; Dr. Cyril H. Francis, regional Veterans Administration medical director, and Dr. Martin G. Goldner, research director, Fort Logan Hospital.

PERSONALS

Dr. Edward E. Johnston has resigned as manager of the Nichols Hospital at Louisville and will enter private practice at Elizabethtown, Ky. Dr. Leverett S. Woodworth has been appointed assistant to the clinical director at the Nichols Hospital. Dr. Woodworth was formerly superintendent of the Massachusetts Memorial Hospital, Boston.

Dr. Howell Brewer, manager of the rehabilitation hospital at Fort Thomas, has been transferred to the veterans' branch office at St. Louis. Dr. Brewer will direct the physical medicine program in the ten hospitals under supervision of the regional branch office.

Dr. George J. Hathaway has resigned from the Veterans Administration to accept a position with the Wisconsin national veterans home at King, Wis.

Dr. Paul B. Magnuson, Chief Medical Director of the Veterans Administration, will attend the Ninth International Congress on Industrial Medicine in London and the Fourth Congress of the International Society of Orthopedic Surgery and Trauma in Amsterdam in September. Dr. Magnuson will attend these congresses as a private physician and not at government expense.

PUBLIC HEALTH SERVICE

EFFECT OF WAR ON CHILDREN

A \$20,000 research grant has been awarded to the International Committee on Mental Hygiene under the National Mental Health Act. Oscar R. Ewing, federal security administrator, has announced. The grant will be used to make a study of the effect of war on children. This study will be made under the direction of Dr. David Levy, professor of psychiatry, Columbia University, New York, and will be presented at the International Congress on Mental Health to be held in London, England, in August. The grant was recommended by the National Advisory Mental Health Council and was approved by the Surgeon General, U. S. Public Health Service.

RESEARCH ON WATER POLLUTION

The recent Water Pollution Control Act passed by Congress authorizes \$800,000 a year for the next five years to erect and equip building at Cincinnati for the use of the U. S. Public Health Service in research and study of water pollution and the training of personnel for the control of water pollution. The Cincinnati laboratory has been the national headquarters for water pollution research since it was established in 1913. The two principal sources of water pollution are domestic sewage and industrial wastes generated during manufacturing processes; for example, gas and coke plants, metal working shops and refineries dump acids, salts, brine and phenols into the water resources; meat packing and canning industries produce organic matter, and the synthetic rubber industry adds butadiene and styrene. More active research is needed because of the increasing pollution of water supplies from which people draw their drinking water.

The Water Pollution Act also authorizes a million dollars a year for the next five years to be granted to the states for

research, surveys and study on the prevention and control of water pollution caused by industrial wastes. The appropriation to carry out this act, the Public Health Service states, will be sought at the next session of Congress.

AWARDS AND COMMENDATIONS

Dr. Thomas Parran

In a ceremony in the office of the Secretary of the Army on September 3 the Distinguished Service Medal was presented to Dr. Thomas Parran Jr., formerly the Surgeon General, U. S. Public Health Service. The citation read as follows:

Dr. Parran, the Surgeon General, United States Public Health Service, performed exceptionally meritorious service in a duty of great responsibility to the government by extensive support to the Army in implementing civilian public health and medical service programs and aiding and advising in the development of the Army's preventive medicine programs from December 1941 to December 1946. With exceptional foresight, energy, initiative and outstanding spirit of helpful cooperation Dr. Parran's technical knowledge was applied administratively to insure solution of vast health problems in an economic and efficient manner resulting in worldwide success for the Army's health program in spite of major adversity and hazard. His advice and undaunted spirit as well as personal courage and capacity for eliminating frequent administrative obstruction aided in preventing any widespread health deficiencies among our own civilian and military population, those of liberated countries and allies, displaced persons, and enemy groups after they came under Army control. His efforts contributed materially to the successful prosecution of the war against the common enemy and reflect outstanding credit on himself and the government of the United States.

Medical News

(Physicians will confer in favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARKANSAS

University Appointments.—Harry J. Clausen, Ph.D., was appointed associate professor of the department of anatomy of the University of Arkansas School of Medicine, Little Rock, on July 1. Dr. Clausen is a graduate of the State University of Iowa and New York University. He was professor and head of the department of anatomy, Loyola University School of Dentistry, New Orleans, and formerly was associate professor of anatomy at the University of Colorado School of Medicine, Denver. James S. Dimming, Ph.D., has been appointed assistant professor in the department of biochemistry. Dr. Dimming received his Ph.D. degree in 1948 from Oklahoma Agricultural and Mechanical College, Stillwater. Dr. James O. Ferguson, Danville, a graduate of the Medical School, 1945, has been appointed instructor in the department of anatomy. Dr. Ferguson was discharged from the U. S. Army Air Corps in July 1948.

DELAWARE

State Medical Meeting.—The Medical Society of Delaware held its annual meeting at the Colony Club, Rehboth, September 13-15 under the presidency of Dr. Howard S. Riggins. Guest speakers included:

Fred W. Wittich, Minneapolis, Minn., Allergic Diseases.
John B. Montgomery, Philadelphia, Office Gynecology.
Hart E. VanRiper, New York, Poliomyelitis Research.
Thaddeus L. Montgomery, Philadelphia, Factors in the Low Mortality Rate in Obstetric Practice.
Clarence S. Livingood, Philadelphia, Diagnosis and Treatment of Foot and Hand Eruptions.
Russell Wigh, Philadelphia, Limitations of Roentgen Diagnosis.
Lawrence S. Carey, Philadelphia, Management of Cardiac Infarction.
Richard T. Smith, Philadelphia, Treatment of Arthritis.
John Z. Bowers, Washington, D. C., Use of Radioactive Isotopes in Clinical Medicine.
W. Paul Havens Jr., Philadelphia, Infectious Hepatitis.
John C. Ulery, Philadelphia, Delivery of Quadruplets by Caesarean Section.
Norman R. Ingraham Jr., Philadelphia, Intensive Therapy of Syphilis.
The address at the annual banquet was given by Dr. Brian Hunt Vavdry, Oxted, Surrey, England, on "Impressions of Socialized Medicine in England."

ILLINOIS

Resolution on Military Service.—The council of the Illinois State Medical Society has made public a resolution adopted recently urging young physicians to volunteer immediately for military service. The society pointed out that of the additional physicians needed by the armed forces before Jan. 1, 1949, Illinois probably will have to supply about 600. The society states that the resolution was directed especially at those young doctors who received all or part of their medical education at the expense of the government, under the wartime A.S.T.P. and V-12 programs, but who did not serve in the armed forces because the war ended before they had completed their courses.

Chicago

Relation Between Nucleus and Cytoplasm.—The American Cancer Society has awarded a grant of \$18,935 to the University of Illinois College of Medicine in support of cytochemical studies of relations between nucleus and cytoplasm. The studies will be conducted by the department of pathology, under the supervision of Isidore Gersh, Ph.D., associate professor of pathology.

The Ranson Lecture.—Dr. George M. Lyon, Washington, D. C., chief of the radioisotope section, department of medicine and surgery, Veterans Administration, will deliver the Ranson Lecture on "The Radioisotopes in Medicine," October 22 at 4:30 p. m. at the Archibald Church Library of Northwestern University Medical School. The lecture is sponsored by the Theta Chapter of Phi Beta Pi Fraternity. All members of the American Medical Association are invited.

Personals.—Dr. Max C. Igloe has been appointed head of the city health department's first district health center at 800 South Paulina Street, which will open when the whole staff has been chosen. Dr. Igloe, a veteran of World War II, has been director of outpatient services of the Veterans Administration in Chicago.
—Dr. James J. Callahan, chairman of the department of bone

and joint surgery of the Stritch School of Medicine of Loyola University, attended the congress of the International Society of Orthopaedic Surgery and Traumatology, September 13-18, at Amsterdam, Netherlands, as a delegate from the United States.

INDIANA

State Medical Meeting.—The annual meeting of the Indiana State Medical Association will be held at the Murat Temple, Indianapolis, October 26-28 under the presidency of Dr. Cleon A. Nafe, Indianapolis. Guest speakers at the general meeting will be:

Eugene B. Ferris, Cincinnati, Evaluation and Management of Hypertension.
John M. McLean, New York, Corneal Grafting.
Arthur C. Curtis, Ann Arbor, Mich., Sarcoidosis.
Ralph M. Tovell, Hartford, Conn., Role of Analgesics and Anesthetics in Production of Asphyxia Neonatorum.
Wingate M. Johnson, Winston-Salem, N. C., Need for Recognition of General Practice.
Herbert E. Schmutz, Chicago, Carcinoma of the Uterus.
Earl D. McBride, Oklahoma City, Disability Evaluation.
Hugh R. Rutt, Rochester, Minn., Present-Day Status of Tests of Hepatic Function.
William K. Keller, Louisville, Ky., Observation.
Isador S. Ravdin, Philadelphia, Vagotomy.
Paul R. Hawley, Chicago, Only Doctors Can Defeat the Socialization of Medicine.
Archie L. Dean, New York, Cancer of Genito-Urinary Tract.
Irving S. Wright, New York, Use of Anticoagulants in the Treatment of Diseases of the Heart and Blood Vessels.
Albert D. Kaiser, Rochester, N. Y., Virus Infections in Children.
Austin M. Bruce, Chicago, about atomic radiation in medicine.

Section meetings will be held Wednesday at 4:30 p. m. At a dinner sponsored by the Indiana Academy of General Practice Wednesday at 6 p. m. Dr. Johnson will be the speaker. The annual dinner speaker will be Dr. Ernest E. Irons, Chicago, President-Elect, American Medical Association. The Woman's Auxiliary to the association will meet October 26-28 at the Murat Temple.

KANSAS

Tumor Clinic.—The Sedgwick County Medical Society will hold a clinic at its October 19 meeting in Wichita, on "Malignant Tumors of the Respiratory System." Seven physicians will present ten minute papers on the subject.

Mental Hygiene Meeting.—The Kansas Society for Mental Hygiene meeting in Topeka, October 25, will discuss plans for legislative action, roles of laymen and others in promoting mental health and the development of an effective mental hygiene program.

Advisory Committee on Health.—The Sedgwick County Medical Society and the county and city commissioners have sponsored a new board to act in an advisory capacity to the city and county. The board, to be known as the Sedgwick County Medical, Hospital and Health Board, consists of eleven members, one each from the Board of County Commissioners, Board of City Commissioners, Wichita Board of Education, and a layman appointed by the Board of City Commissioners and six doctors appointed by the county medical association, subject to ratification by the boards of county and city commissioners.

MASSACHUSETTS

Seminar in Legal Medicine.—The department of legal medicine of the Harvard Medical School, Boston, is offering a seminar in legal medicine November 8-13 for pathologists, medical examiners and coroners. Lectures and demonstrations will deal with various problems likely to be encountered incident to the investigation of deaths in the interests of public safety and to the performance of medicolegal autopsies. The enrollment is limited to twenty-five and the fee is \$50. Application should be made on or before October 30 to the Department of Legal Medicine, 25 Shattuck Street, Boston (15).

Dr. Hyde to Open Health Forums.—Henry Van Zandt, Hydesville, Md., U. S. representative of the World Health Organization, will speak at the first of a series of "Health Forums" September 29 from 3:30 to 5:30 p. m. at the Peter Bent Brigham Hospital. The speaker at the first of a series held at the Harvard School of Public Health, limited seating capacity, it is through the Office of the Senior Surgeon of the U. S. Department of the Interior. In that capacity of American plans and policies of the World Health

MINNESOTA

Personal.—Dr. Olaf Mickelsen, Minneapolis, associate professor in the University of Minnesota's laboratory of physiological hygiene, has resigned to become chief of the biochemical section in the U. S. Public Health Service nutrition division in Washington, D. C. Dr. Mickelsen has been on the staff of the University of Minnesota since 1940.

The Rigler Lecture.—Dr. Merrill C. Sosman, clinical professor of radiology at Harvard Medical School, Boston, will deliver the annual Dr. Leo G. Rigler lecture in radiology at the University of Minnesota, Minneapolis, October 28 at 8 p. m. in the Minnesota Museum of Natural History auditorium on "Roentgenological Aspects of Heart Disease." This annual lectureship was established in 1944 by colleagues, former students and friends in recognition of Dr. Rigler's contributions to teaching and research in radiology. He has been chief of the department of radiology at the University of Minnesota Medical School since 1926.

NEW YORK

Postgraduate Lectures.—The Medical Society of the State of New York with the cooperation of the New York State Department of Health has arranged postgraduate lectures as follows: The Onondaga County Medical Society will hear Dr. Leo M. Taran, New York, speak on "The Treatment of Rheumatic Fever" at the University Club, Syracuse, October 5 at 8:30 p. m. On October 30 Dr. Irl H. Blaisdell, Syracuse, will speak on "The Problem of Carcinoma of the Larynx" before the members of the Sullivan County Medical Society meeting at the Lenape Hotel, Liberty, at 8:30 p. m.

Courses in Psychiatry and Neurology.—The New York State Department of Mental Hygiene on September 10 opened resident courses in psychiatry and neurology at the Psychiatric Institute in New York City. The forty-eight weeks of formal instruction and clinical work is designed to recruit physicians for state mental hospitals. The fifty-three registered physicians in the course will be assigned for a two year period to the staffs of the various state hospitals for instruction and clinical practice. A similar course opened at Syracuse Psychopathic Hospital September 17. This program of training psychiatrists was started in 1946.

New York City

Changes in Long Island Faculty.—Sixty-one promotions and seventy-two appointments have been made at the Long Island College of Medicine, Brooklyn, for the coming year, increasing the faculty to about 500. The department of psychiatry, with its program of expansion, has twenty-six new faculty members; the department of medicine has eighteen new faculty members. Those promoted were Dr. Frank P. Light, former clinical professor of obstetrics and gynecology, to professor of clinical obstetrics and gynecology; Drs. Richard L. Frank and Edwin P. Falsey, former associate professors of clinical psychiatry, to professors, and Dr. Charles B. Jones, former associate professor of clinical surgery, to professor.

Annual Academy Graduate Fortnight.—The New York Academy of Medicine will hold its annual Graduate Fortnight October 4-15 on the subject, "Advances in Therapy." The program includes evening lectures, morning panel discussions, afternoon hospital clinics and scientific exhibits. Out of state speakers at the evening lectures include:

Austin Smith, Secretary, Council on Pharmacy and Chemistry, American Medical Association, Chicago, Safeguards in the Use of New Drugs.

Lauren H. Smith, Philadelphia, A Critique of the Physiological Methods in Psychiatric Therapy.

Robert P. Knight, Stockbridge, Mass., A Critique of the Present Status of the Psychotherapies.

Reginald H. Smithwick, Boston, Evaluation of Surgical Treatment of Hypertension.

Cyrus C. Sturgis, Ann Arbor, Mich., The Carpenter Lecture, Advances Concerning the Etiology and Treatment of Hematologic Disorders.

Louis K. Diamond, Boston, Treatment of Rh Hemolytic Disease of the Newborn.

Charles A. Janeway, Boston, Newer Use of Blood Fractions.

Bernard N. Halpern, Paris, France, Newer Knowledge Concerning the Antihistamine Drugs.

Richard H. Sweet, Boston, Surgical Treatment of Carcinoma of Esophagus.

James B. Blodgett, Boston, Early Ambulation Following Surgical Procedures.

Chester M. Jones, Boston, Treatment of Peptic Ulcer.

James H. Meats, Boston, Treatment of the Complicated or Neglected Case of Graves' Disease.

The registration fee for physicians other than fellows of the Academy of Medicine is \$6, payable to the New York Academy of Medicine, 2 East 103 Street.

PENNSYLVANIA

Benjamin Rush Award.—The Medical Society of the State of Pennsylvania has selected Alan Scaife of Pittsburgh, and the Rotary Club of Lancaster to receive its first Benjamin Rush Award, which was inaugurated to recognize the public-spirited citizens and organizations which have collaborated with the medical profession in the promotion of better health and medical care for all Pennsylvanians. Each county medical society throughout the state nominates a lay person and an organization from its area, and from these the board of trustees of the state society select the winner. Alan Scaife is a trustee of the Elizabeth Steel Magee Hospital, the Woman's Hospital, the Mellon Institute of Industrial Research, the Carnegie Hero Fund Commission, and the University of Pittsburgh. As a trustee of the university, he has devoted much time in furthering the development of the school of medicine and the hospitals comprising the University Medical Center. He served in both World Wars. The Rotary Club of Lancaster was selected for its part in the organization, development and maintenance of its Cleft Palate Speech Clinic, which not only corrects the defect in children with cleft palate but carries through in speech training and rehabilitation.

Dr. Benjamin Rush, for whom the award is named, was born near Philadelphia in 1743, and became one of the outstanding medical men in history. He was professor of the practice of medicine in the University of Pennsylvania, a founder of the Philadelphia College of Physicians, a signer of the Declaration of Independence, and a member of the Continental Congress.

TEXAS

Tumor Seminar.—A tumor seminar will be held at Brooke General Hospital, San Antonio, October 23, by the San Antonio Society of Pathologists. It will be conducted by Dr. Shields Warren, Boston, on "Tumors and Diseases of the Reticulo-Endothelial System." Twenty-five cases will be presented. All pathologists interested are invited to attend. There is no admission fee. Inquiries may be directed to Dr. B. F. Stout, Medical Arts Building, San Antonio.

WASHINGTON

Annual State Meeting.—The annual convention of the Washington State Medical Association will be held at the Olympic Hotel, Seattle, October 3-6 under the presidency of Dr. Albert J. Bowles, Seattle. The program has been arranged in symposiums followed by panel discussions on pediatrics, gynecology, thoracic surgery, surgery (intestinal obstruction), heart vessels, orthopedics, liver, roentgen therapy, common psychoses, found in general practice and ear, nose and throat. Guest speakers on the symposiums include: John Rock, Boston, The Physiology of Fertilization, and Frederick L. Reichert, Stanford University, Calif., Headaches, Tics and Neuralgias of the Head. At the dinner October 3 the guests will be Dr. Roscoe L. Sensenich, South Bend, Ind., President of the American Medical Association, Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, and Dr. John W. Cline, San Francisco, past president of the California State Medical Association. The Woman's Auxiliary will meet in conjunction with the state association.

WEST VIRGINIA

Research at the University.—The department of bacteriology and public hygiene of the West Virginia University School of Medicine, Morgantown, has received a grant from the division of research grants and fellowships of the U. S. Public Health Service to be used for the development of serologic methods for the identification and classification of Actinomyces bovis. The grant was made to John M. Slack, Ph.D., head, department of bacteriology, who has been interested in this problem for years. The department of pathology also received a U. S. Public Health Service grant of \$5,000 to be used to expand the cancer teaching facilities.

County Health Merger.—A tricity health unit, comprising Morgan, Berkeley and Jefferson counties, has been organized in the eastern Panhandle to take over the service of the part time health unit and nursing services in Morgan and Jefferson counties and to improve and extend health services in the three counties. Additional clinical services have already been arranged, and direct individual service will be provided where needed. A budget of \$57,000 has been fixed by the officials of the three counties. Part of this amount will be provided by the state health department with the aid of federal funds. Dr. Garnett P. Morison, Charles Town, who

has been largely responsible for effecting the merger of health services in the three counties, will serve as health director of the unit. He has been serving as part time health officer for both Berkeley and Jefferson counties.

WISCONSIN

Dr. Woolsey Appointed Professor of Physiology.—Dr. Clinton N. Woolsey of the Johns Hopkins University School of Medicine, Baltimore, has been appointed to the recently created chair, the Slichter Research Professorship of Physiology, at the University of Wisconsin Medical School, Madison. Dr. Woolsey, a graduate of Johns Hopkins University School of Medicine, has served his alma mater successively as assistant in physiology, instructor, assistant and associate professor in that department. In 1938-1939 he had an appointment as Rockefeller Fellow at the Eldridge Reeves Johnson Foundation for Medical Physics and a Fellowship in Neurology, both at the University of Pennsylvania. The Wisconsin Alumni Research Foundation established the Charles Sumner Slichter Research Professorship in the Natural Sciences as a memorial of the late Professor Charles Sumner Slichter.

Course in General Medicine.—The University of Wisconsin Medical School, Madison, is presenting an Intensive Course in General Medicine, October 18-22, at the State of Wisconsin General Hospital and the medical school. The course will comprise lectures, didactic work and ward rounds, and case demonstrations. The anemias, diabetes, dermatologic conditions, pulmonary disabilities, gastrointestinal pathology, newer drugs and diagnostic methods will be included in the material offered. This course will be under the general direction of Dr. Ovid O. Meyer, chairman of the department of medicine. Maximum registration will be fifteen physicians and the minimum eight. The fee will be \$25. Application should be made immediately to Dr. Llewellyn R. Cole, Coordinator of Graduate Medical Education, The Medical School, 418 North Randall Avenue, Madison (6).

GENERAL

Ambulatory Fracture Association.—This association will hold its annual meeting at the Mayflower Hotel, Washington, D. C., October 4-6 under the presidency of Dr. Homer D. Junkin, Chicago. The meetings are open to members and guests for discussion of fracture cases and problems, and all surgeons are invited to attend. The dinner speaker will be Dr. Joseph M. Murray, Ottawa, Ontario, Canada.

Special Society Meeting.—The annual session of the American Otorhinologic Society for Advancement of Plastic and Reconstructive Surgery, Inc., will take place at the Palmer House, Chicago, October 9, beginning at 6 p. m. Dr. Wayne B. Slaughter, Chicago, will speak on "Alar Deformity Due to Hare Lip" and Dr. Bert E. Ellis, Indianapolis, Ind., on "Problems of the Beginner in Rhinoplasty." Dr. Jacob Daley, New York, is president of the society.

Meeting of Maxillofacial Surgeons.—The annual meeting of the American Society of Maxillofacial Surgeons will be in Ann Arbor, Mich., September 26-29. Surgical clinics will be held each morning at University or St. Joseph's hospital. Subjects to be discussed include blood loss in surgery of cleft lip and palate cases, treatment of mandibular deformities following removal of nonmalignant tumors, water and protein balance in preoperative management of maxillofacial cases and The annual dinner will be held at Club Tuesday at 7 p. m.

Lost Narcotic Order Forms.—The Office of the Commissioner of Narcotics, Washington, D. C., has submitted to importers, manufacturers and wholesale dealers in narcotics the serial numbers of a great many order forms for opium and other narcotics which have been lost or stolen and which may possibly be in the hands of persons not entitled to them. Importers, dealers and manufacturers are cautioned not to fill any order for narcotics on which one of the serial numbers listed appears and to forward any such order form received at once to the Office of the Commissioner of Narcotics.

Meeting to Honor Dr. Béclère.—The American Society for the Study of Sterility, Eastern Section, will hold a special meeting open to members of the medical profession to honor Dr. Claude Béclère of the Hospitals of Paris, France. Dr. Béclère, a pioneer in the field of gynecological roentgenology, will deliver a paper on "Hysterosalpingography and Sterility," October 1 at 8:15 p. m. at the New York Academy of Medicine, 103rd Street and Fifth Avenue. Since seating capacity is limited, those desirous of attending are urged to write immediately to The American Society for the Study of Sterility, Eastern Section, Suite 102, 1160 Fifth Avenue, New York (29), for a ticket of admission.

Proctologists Meeting.—The annual meeting of the National Proctologic Association will be held at the Brown Hotel, Louisville, Ky., October 6-8 under the presidency of Dr. Paul S. Osborn, Louisville. Besides numerous papers to be presented there will be an operative clinic Thursday and Friday mornings. The president's reception and annual banquet will take place Wednesday evening, with Dr. Alfred J. Cantor, Flushing, N. Y., giving the address on "Ambulant Proctology." The registration fee for non-members is \$10 unless one has registered before, in which case it is \$25, the regular membership fee.

Science Writing Award.—The Westinghouse Science Writing Awards of \$1,000 each were presented by the American Association for the Advancement of Science at its recent annual meeting to Frank Carey, science reporter in the Washington Bureau of The Associated Press, and Florence Moog, Ph.D., assistant professor of zoology at Washington University, St. Louis. Mr. Carey, a newspaper man for seventeen years, was granted the best newspaper science writing award for a four part series, "Newest Wonder Drug Conquers Dread Scrub Typhus," distributed by The Associated Press. Dr. Moog received the best magazine science writing award for an article on "The Biology of Old Age," which appeared in the June issue of *Scientific American*. The purpose of the George Westinghouse Science Writing Awards is to encourage high standards of science writing in newspapers and magazines and to stimulate interest in young writers in making a career of science writing. The awards competition are administered by the American Association for the Advancement of Science.

Incidence of Poliomyelitis.—According to the U. S. Public Health Service as of September 9, the largest weekly total of reported cases of poliomyelitis this year was recorded for the week ended September 4—1,512 as compared with 1,412 the previous week. The five year median for the week is 956 cases. Increases of 10 or more cases (aggregating 134 cases) were reported in seven states, as follows (last week's figures in parentheses): California 264 (226), Illinois 87 (62), Indiana 29 (19), Tennessee 34 (18), New York 101 (87) (decline in New York City from 52 to 49), South Dakota 21 (10) and Kansas 28 (18). The incidence increased slightly in North Carolina from 133 to 138 but declined in Texas from 71 to 52. Only nineteen states reported more than 20 cases for the week ending September 4 and only 25 states reported more than 100 cases to date. Total cases reported to date are 12,666, as compared with 3,834 in 1947, 12,434 in 1946, and a five year median of 6,156 for the corresponding period. Although more cases have been reported to date than for the corresponding period in 1946, and the peak week of 1946 came earlier than usual, i. e., the week ended August 17, a prediction at this time regarding the final figure for this year would be hazardous, as the rate of decline following the peak week is not constant. In 1946 the decline was rather slow, and almost twice as many cases were reported after the peak week as up to the end of that week, while in 1944 the numbers of cases were approximately equal for the two periods, and in 1947, 1945 and 1943 more cases were reported during the first period.

Marriages

FRANKLIN ROBERT SMITH, Milwaukee, to Miss Lenore Anderson of River Falls, Wis., at Rochester, Minn., June 5.

BEECHER WILLIAM LEVERSEE, Rexford, N. Y., to Miss Charlotte Ann Fegan of South Bend, Ind., June 19.

FLETCHER ALLEN MILLER, Iowa City, to Miss Barbara Leontine Sheridan at Hartford, Conn., June 12.

GLENN WALTER PENNINGTON to Miss Mary Justine McDevitt, both of Charlotte, N. C., May 8.

MICHAEL R. SCULLY to Miss Mary Louise McQueeney, both of Bridgeport, Conn., May 15.

HUNTER MERRILL BROWN to Miss Caroline Tardy Matthews, both of Birmingham, Ala., May 5.

PAUL KARLIK JR., Hazelton, Pa., to Miss Elizabeth Jane Rineard of Harrisburg, June 25.

JOHN LOTT BOYER, Arendtsville, Pa., to Dr. MARY FRANCES VASTINE of Philadelphia, June 2.

ROBERT CANNON SAMPLE to Miss Frances Lyle, both of Hendersonville, N. C., May 1.

RAYMOND EVERETT MILLER, Trenton, N. J., to Miss Enid Fenton of New York, May 16.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 21, 1948.

International Conference on Mental Hygiene

Over 1,600 delegates from forty-six nations attended the International Conference on Mental Hygiene. It made a new departure at such international gatherings by tackling the most important problem faced by medicine, the treatment of a sick world, so as to promote good feeling among nations. Lord Addison (once an anatomist), who was the first Minister of Health in this country, spoke on behalf of the Government. He said that advances in the physical sciences had presented the world with its greatest question, whether we should make the best use of the physical powers provided by science, or allow them to be prostituted by war. Wars begin in the minds of men, and it is in the minds of men that the defences of peace must be constructed.

Mr. R. A. Butler, M.P., president of the National Association for Mental Health, said that there is more unknown territory to explore in the mind of man than remains undiscovered on the terrestrial globe. Moreover, the minds of men are thrown out of balance by the recent war and economic distress. Even in countries whose ways of life and belief appear to be intact, the most ordered and disciplined intellects are appalled that man is a prey to engines of destruction which he was proud to invent but is now unable to control.

Dr. F. Fremont-Smith, vice president for the United States of the International Committee for Mental Hygiene, said that today there is available new knowledge of the forces which impose on groups unhealthy attitudes which constrict, distort and hide from view the great capacities for love and affection, for friendship and cooperation, which are natural to all human beings. Can man's increasing knowledge of his own behavior save mankind?

Professor Henrique Roxo, of the University of Brazil, said that abnormalities in action are often the testimony of mental illness. Interpreting the facts that followed war, one cannot be surprised if, instead of peace and tranquillity, one finds unjustifiable revolutions, unnecessary strikes, attitudes of aggressiveness and sometimes an unbelievable tendency to suppress the freedom of man.

Dr. Carl Binger, of Cornell University, said that chief concern of the Congress should be the prevention of war. The greatest of all human problems cannot be solved by moral exhortation. We need to know more about the transmission of war fever, how the infection spread and why it is no longer a localized endemic but so quickly reached pandemic or global proportions. We need to know how to isolate the source of infection. Medical and social students who specialize in the study of man and his relations must marshal all knowledge and our best intelligence to grapple with the problem of how to prevent war; how to interfere at every possible point with its spread.

International Congress on Child Psychology

Representatives of fifty-three nations assembled in London for the International Conference on Child Psychology as part of the International Congress on Mental Health. Dr. F. H. Allen, president of the Orthopsychiatric Association of America, opened a discussion on aggression in relation to emotional development. He said that the basic birthright of every child is to become through his own experience an individual in his own right. The more devastating frustrations develops through denying the child the support which he needs to achieve a healthy sense of himself in the culture into which he was born. Overpossession and protection of the child from all anxiety, holding

him in the vise of parental care, frustrate the growth potential, paralyzing aggressive action in early years, and might lead later to desperate efforts to cut the ties which bind parents and child together. The more a child can be helped to live out in real life the feeling which arises in the growth process, the healthier will be the result, but there remains an important place for fantasy in every child's life.

BUENOS AIRES

(From Our Regular Correspondent)

August 4, 1948.

Gram-Negative Bacteria of the Respiratory Tract

Drs. Castex, Capdehourat and Rechniewski reported before the National Academy of Medicine their investigation of 378 strains of gram-negative bacteria isolated from 1,000 samples of subacute and chronic processes, localized in different parts of the respiratory apparatus (41 from nasal fossas, 123 from paranasal sinuses, 55 from pharyngeal secretion, 129 from sputum, 30 from pus of pulmonary abscesses and of pleurisy). The bacterial species found were *Escherichia coli* (26 cases), *Proteus vulgaris* (48 cases), *Aerobacter aerogenes* (20), *Klebsiella pneumoniae* (239), *Pseudomonas aeruginosa* (20), and 23 which could not be classified. This investigation discloses that in comparison with observations made before the era of the antibiotics and sulfonamide drugs the gram-negative bacteria have increased in frequency and quantity. Their abundance is apparent not only from the diminution of gram-positive bacteria, but also from a real increase in the gram-negative. This is related to the use of antibiotics and sulfonamide compounds which have a known influence on the gram-positive flora. The authors advise not to use any antibiotic treatment in infectious diseases of the respiratory tract, as trivial as they may seem to be, without knowing previously the nature of the responsible germs and the degree of their sensitivity to the medicament which presumably would be efficient. When such diseases continue for a long time in spite of treatment, periodic bacteriologic examinations should be carried out to find out the influence of the administered drug. According to the authors, the extraordinary use made of penicillin has determined the increase of the chronic refractory processes, originated, at least partly, by the gram-negative bacteria which are insensible to its action. For this reason, it would not be wise to treat a patient exclusively with penicillin or sulfonamide compound, when a primary or secondary gram-negative flora exists, and particularly when it is prevailing. Penicillin and sulfonamide compounds must therefore be used with great caution.

Furthermore, the authors observed that in the serious respiratory diseases of putrid and gangrenous character, the gram-negative bacteria coexist constantly with the anaerobic germs. The gram-negative germs are the most difficult ones to extinguish therapeutically; often they are the residual flora which is responsible for the incurability of a chronic process. If antibiotics are used against these gram-negative germs, it must be done from the beginning in efficient, elevated doses. In many cases streptomycin is preferable to penicillin. The mentioned species of gram-negative bacteria frequently cause intense cutaneous reactions together with others of symptomatic focal type (allergic). The gram-negative germs, especially *Esch. coli*, produce penicillinase, which inactivates penicillin. With the increase of the gram-negative germs the production of penicillinase also increases, thus decreasing more and more the effect of penicillin.

Persistent Paroxysmal Ventricular Tachycardia

Drs. F. V. Gaspary, P. R. Tuero and R. Garcia Turiella of Rosario observed a male 18 years old who presented, as initial symptom of a general infectious process, paroxysmal ventricular tachycardia.

The electrocardiogram evidenced alterations of form of the ventricular complexes of ventricular paroxysmal tachycardia.

during the different days, with four types of complexes which appeared in irregular succession. This tachycardia presented retrograde ventriculoauricular conduction, at the beginning regular and later on with incomplete block of the type 2/1. The tachycardia disappeared when high doses of quinine (for lack of quinidine) were given, but reappeared each time immediately after the administration of the drug was diminished or increased. When the rhythm became regular the post-tachycardiac syndrome appeared, and furthermore P waves of high voltage, which are considered a part of this syndrome. The tachycardia is interpreted as a manifestation of the infectious process the etiology of which is unknown. The patient died of an unknown infection of peritoneal type.

Brief Items

Prof. Dr. C. Bonorino Udaondo has been elected president of the National Academy of Medicine for 1948-1949.

The Argentine Government has given 36,000,000 pesos to the City of Buenos Aires for improvement of the hospital services.

GERMANY

(From Our Regular Correspondent)

Aug. 24, 1948.

Medical Mission to Germany

To fill the gap in the German academic world which the Hitler régime left by isolating Germany from the rest of the world, the Military Government promotes the reestablishment of contacts with members of the German medical profession and the exchange of information on medical advances made during the past ten years.

Sponsored by the Cultural Affairs Adviser to the Military Governor and the Education and Cultural Relations Division, Office of Military Government, United States, the Unitarian Service Committee, the Service Branch of the Unitarian Church of America, sent a medical mission to Germany headed by Dr. Krayer, German-born head of the department of pharmacology, Harvard Medical School. The group consists of Drs. Dallas B. Phenister, vice chairman of the mission, professor emeritus of surgery, University of Chicago; Howard C. Taylor Jr., professor of obstetrics and gynecology, Columbia University College of Physicians and Surgeons, New York; David G. Cogan, director of the Howe Laboratory of Ophthalmology, Harvard Medical School; Herman De Wilda, instructor in clinical dentistry, Harvard Medical School; John T. Esdall, associate professor of biological chemistry, Harvard Medical School; George Keble Hirst, chief of the division of infectious diseases, Public Health Research Institute, New York; Francis D. W. Lukens, director of the George S. Cox Medical Research Institute, University of Pennsylvania; Benjamin H. Robbins, head of the department of anesthesiology, Vanderbilt University School of Medicine, Nashville, Tenn.; Carl F. Schmidt, professor of pharmacology, University of Pennsylvania School of Medicine; Erwin W. Strauss, director of professional education and research at Veterans Hospital, Lexington, Ky.; Joseph F. Volker, dean of the Tufts College Dental School, Boston; William M. Wallace, assistant professor of pediatrics, Harvard Medical School, and Friedrich Wassermann, professor of anatomy, University of Chicago.

Thus far, the group has lectured in Frankfurt, Berlin, Goettingen and Munich. It will visit Tuebingen, Freiburg and Heidelberg before leaving for New York early in September. The mission was unable to enter the Russian Zone, but has made contacts of an informal nature with German medical scientists in the Russian as well as in the United States, British and French sectors of Berlin.

According to Dr. Krayer, the biggest surprise of the German doctors was expressed with respect to the large scale of blood

banks and transfusions in the United States. They were eager to learn about the technics employed in that field.

The mission not only has benefited German medical science but has also contributed to the lifting of the morale of the German medical profession by demonstrating that the United States is eager to resume normal professional and cultural relations with Germany.

Nutrition in Western Germany

Now, two months after the introduction of the currency reform in Western Germany, it can be stated that it has had a most beneficial effect on the food situation. There was no unrationed food available on the market prior to the new currency. Almost overnight this picture changed radically. Fresh fruit and vegetables appeared in stores and market places and found ready buyers. The population was so stunned by this miracle-like change that people spent their *Kopfgeld* (45 German marks which were given to each person who turned in the equivalent amount of old currency) for buying unrationed food irrespective of its high prices. In the weeks following, they became more conscious that they could not long afford to pay these prices, and buyers' strikes, organized by the trade unions, started all over the zones. They continued for about two weeks. The result of these strikes was a general lowering of the price level, between 10 and 50 per cent. Only yesterday, this correspondent spent an hour in roaming through the fruit and vegetable market of the once famous, now partly destroyed, but nevertheless bustling city of Wiesbaden and found an abundance of plums, pears, apples, tomatoes, onions, cucumbers, cabbage, lettuce and many other edibles at reasonable prices, a thing absolutely unheard of in Germany only two months ago.

The crop, owing to the favorable weather during the summer, is abundant. The rationing of potatoes, Germany's most important staple food, has been lifted as of August 18, and there is reason to believe that bread and flour will shortly be taken off the ration list. A great scarcity continues in meat, fats and milk, but it can fairly be stated that in Western Germany the food situation has tremendously improved since the currency reform. The barriers between the three Western zones have been lifted for Germans as of August 20, and persons and goods can freely circulate between the United States, British and French zones. This, too, cannot fail to influence favorably the recovery of Western Germany.

Medical News from Berlin

Unlicensed Doctors Detected.—Since the end of the war, the Berlin bureau of health has detected and had punished 128 persons who practiced medicine without license. During the same time, 40 physicians, 11 midwives and 1 nurse were indicted for illegal abortions. Fifty persons, among them 35 physicians, were punished for violations of the narcotic law.

Infectious Diseases in Berlin.—This is a review of the most important infectious diseases (number of new cases) in Berlin since the end of the war:

	Typhoid	Dysentery	Polio-myelitis	Syphilis	Gonorrhea
Second half of.....1945	16,66	15,182	55	.....	.....
1946	3,475	3,125	89	12,978	32,841
1947	1,084	1,821	2,426	9,007	18,533
January.....1948	46	28	29	647	1,537
February.....1948	41	28	17	562	1,714
March.....1948	38	45	12	448	1,135
April.....1948	39	26	24	482	1,414
May.....1948	49	48	9	557	1,279

The numbers for May are not complete. There were 2,995 new cases of tuberculosis reported in April, as compared with 2,515 in March; 561 Berlin residents died from tuberculosis in April.

Correspondence

MEDICINE AND THE ARMY

A Letter from the Surgeon General of the Army

To the Editor:—In THE JOURNAL of Aug. 7, 1948, there appeared an editorial on "Medical Service with the Armed Forces." Increased interest in this subject is evidenced by various editorials and other comments in newspapers throughout the country. The editorial touched on a host of considerations arising out of the recent war, the contemporary situation, and more particularly those precipitated by the passage of the Selective Service Act by the 80th Congress. Inevitably the editorial approached the analysis of these problems from the viewpoint of organized medicine. Perspective is always a question of the position of the viewing subject to the perceived object. For this reason I welcome the opportunity to place before civilian medicine the picture as seen by the Army.

There is no point, if one is interested in solving a problem, to make it difficult when in essence it is simple. Now the problem that faces the armed forces at present, as far as medical care is concerned, is remarkably simple, no matter how difficult it may be to work out a satisfactory solution.

Even before the passage of the recent peacetime Selective Service Act the combined size of the Army and the Air Force had been set for occupation duties at approximately 1,000,000—more than five times the size of the prewar military establishment. The Medical Corps of the Regular Army was not permitted to recruit new members during the war, so that its size at the end of the war was actually smaller because of death and retirement than it had been at the outbreak of hostilities.

The corps has grown but not nearly fast enough to keep pace with the vastly increased requirements precipitated by the more than fivefold expansion in the combined strength of the Army and Air Force. Until now the situation did not reach crisis proportions. This was because the Army was permitted to retain on active service, or call to active service for a tour of duty of about two years, recent graduates of medical schools who had been deferred from wartime service. This deferment enabled them to complete their medical education, and this education was in most cases paid for in whole or in part by the Government. The wartime legislation which obligated this group (ASTP students) for two years of Army service was terminated by law in June 1946, and was limited to graduates before that date.

Informed individuals have known, however, that a critical situation was in the making which would sooner rather than later force the country to decide between a basic revision in its military policy and the devising of extraordinary measures to provide the armed services with adequate medical personnel. Congress was put on notice not once but repeatedly that the situation was deteriorating at an alarming rate and that by early 1949 the crisis would be upon us. Indicative of Congressional concern with the problem was the passage of legislation in the summer of 1947 which provided extra remuneration for doctors and dentists in the armed services, on the assumption that such a salary increase would facilitate procurement and reduce attrition. The shortage of medical personnel at that time was about to jeopardize our occupation policy.

Now that the Selective Service Act has been passed, the shortage threatens to nullify the basic principles of American security. This act increases materially the size of the Army

and Air Force but makes no provision for increased medical support.

It is inconceivable that the American public will permit a specific personnel shortage to endanger its security. Nor will it tolerate a solution based on a deliberate deterioration in the quality of medical service provided for men in the armed forces who are serving at home and abroad. There is a specific provision in the Selective Service Act which states that no man may be inducted until provision has been made for adequate medical care.

The armed forces have a responsibility to do their utmost to conserve such a valuable and scarce resource as medical personnel. It is gratifying to note that the strenuous efforts that the Army Medical Department has made since the end of the war to operate efficiently and economically were pointed out in your editorial. We have been working intimately over the past year with our civilian consultants who are leaders in American medicine, to insure that we benefit from their advice and counsel in keeping our medical standards at the highest level and in estimating our requirements. We hope that the American Medical Association will avail themselves of our invitation to review critically our estimated requirements. We have cut these requirements as low as we believe possible, but we will not cut our medical standards.

At the time of the Congressional hearings on the Selective

Service Act, the Army requested permission to draft certain categories of doctors for short tours of duty with the Army. This request was based on the knowledge that the medical resources which it had available would soon be inadequate to support the current strength, not to mention the increases which would follow the passage of the draft.

It seems a reasonable prediction that the Army for the present and the immediate future will in some degree embrace for a limited period a goodly

proportion of the young men and perhaps the young women in our nation. The ability to assume military responsibilities has become a citizenship function. Without dwelling in further detail on this important trend which must affect the medical profession, it is apparent that we must adopt new concepts and pursue new methods and realize that the military medical mission has become more than ever before a civilian medical mission. It has become increasingly evident that our own Regular Army career officers could not and should not be in sufficient numbers to completely staff a growing citizen Army. The nucleus which they form must be supported by numbers of doctors on temporary service.

The growth of the permanent corps of career medical officers is proceeding but its completion to full strength will not be evident for two or three years. This is because of the residency training period required in civilian hospitals over and above residencies available in Army hospitals. In our effort to make an Army career medically attractive to the medical graduate there have been fundamental changes and reforms in the structure and function of the Medical Department. These have been planned and accomplished with the active support and intimate cooperative efforts of many leaders in American medicine. They include among other things provision for career planning, a system of continuing postgraduate education, and the integration of civilian physicians as visiting men and teaching consultants in our major hospitals in this country and abroad.

The present emphasis on the economic aspects of military service is understandable as your editorial pointed out. Inflation has affected our entire population. One can hope that an economic balance will be worked out soon. Very naturally this

Physicians interested in serving on active duty for periods of at least six months or for longer periods and physicians who are interested in full time or part time medical service on a civilian status with the Army Medical Department are requested to write to The Surgeon General, U. S. Army (Personnel Division), Washington 25, D. C.

economic aspect plays its role in our procurement problem. However, I like to believe and I do believe that medical tradition is based on a loftier pledge than high remuneration.

In the last year or more since we have been able by law to increase our size we have commissioned 600 physicians on an active duty status in the Regular Army. Our standards for admission have been high and they have not and will not be lowered. When one realizes that the prewar corps totaled less than 1,200 this gain may be viewed approvingly.

The key to the situation, however, is not a comparison between what we now have and what we used to have, but rather between what we now have and what we now need.

Because more than 2,000 doctors now serving on temporary duty in the Army will be returned to civilian life during the coming year and because of the contemplated increase in size of these forces due to the Selective Service Act, the Army (including the Air Force) must secure about 4,000 physicians between now and June 1949. Since there is nothing in our experience to encourage us in the belief that such a large number could be secured by voluntary means, the Army requested permission to draft certain categories of doctors for temporary service, particularly the group of young men who were permitted to complete their medical studies during the recent war and have as yet rendered no service to the Government even though the majority of this group received liberal governmental stipends.

Statements about the size of this group have appeared in medical publications, and their numbers have been greatly overestimated. After allowance is made for the attrition for physical disabilities and essential work, it is doubtful whether the remaining number would exceed 3,000. Of these, only about 2,000 will have completed a year's internship by June 1949. It should be remembered here that none of these 3,000 are obligated by any existing law for service for any period of time with the armed medical services.

But the problem confronting the Army is not solely one of numbers. It also has a qualitative aspect. We are still very short of specialists, despite our refresher training and our comprehensive postgraduate training. In a recent communication, I pointed out to the President of your Association that approximately 400 of the required 4,000 doctors who had to be procured before July of next year should be specialists. I further stated that these 4,000 doctors with the included 400 specialists were required in staggered numbers over the coming months.

Time is running out. In opposing the draft of doctors representatives of organized medicine contended that the requirements of the armed forces could be met through voluntary rather than coercive methods. The officers of your organization have repeatedly stated that they would cooperate in every possible way in making this voluntary effort a success. I regret to say that up to this time the situation is not encouraging. As far as we can see, there has not been the slightest increase in procurement of doctors for temporary service since the passage of the draft. Clearly, if American medicine is desirous of avoiding governmental control over the procurement of physicians for the services it is not enough to attack such control—it must provide a concrete alternative. To date no such alternative has proved itself successful. One concrete suggestion that might prove feasible is to seek the voluntary cooperation of universities and other institutions in meeting the Army's requirement for specialists by granting leaves of absence to one or two members of their staff, preferably for one year—possibly for six months.

The Medical Department of the Army is not involved per se in the political or economic philosophy of medical care. It has a specific obligation to furnish medical support to the Army and Air Force of the United States. Clearly, it cannot furnish such support unless it has adequate numbers of properly quali-

fied doctors. It has done, and always with the advice and in the closest cooperation with the leaders in civilian medicine, what it can to make the Medical Department efficient and thereby attractive. This is continuing.

The problem is indeed simple. The American Government has decided on a program of defense and security that requires large numbers of men to serve in the armed forces. But clearly these men cannot be expected to serve unless they are provided with adequate medical care. The Medical Department of the Army has the responsibility for operating the system whereby such medical care is provided. Only civilian medicine can make available the doctors required to operate the system. Not only the Army, but the American public is eagerly awaiting the response of the civilian medical profession.

R. W. BLISS,
Major General
The Surgeon General.

EN. NOTE:—The American Medical Association has been one of the groups to urge on the President of the United States and on various government agencies, including congressional committees and the armed forces, the pressing need for the establishment of a civilian medical advisory committee to the National Security Resources Board to consider the medical needs of the nation and a joint civilian and military advisory committee to the Secretary of Defense to study the needs and consider sound policies for the medical services of the armed forces.

It appears that now these two advisory groups are about to become operative. This will place the Council on National Emergency Medical Service of the American Medical Association in a much better position to render sound opinions and advice to the medical profession as to how many additional doctors the armed forces must have during this peacetime period of expansion and how many doctors might be spared without resulting in serious shortage of physicians for the civilian population at large if war should come.

RABIES DIAGNOSED BY INOCULATION OF SALIVA INTO ANIMALS

To the Editor:—In THE JOURNAL, Jan. 24, 1948, page 253, appeared an editorial on rabies. The proof of the isolation of the virus from saliva has not been furnished for the first time, as described on page 254, but had already been established repeatedly thirty years ago. The works by Bertarelli and Volpino (*Morphologische und biologische Beobachtungen über einen Fall v. Wutkrankheit bei Menschen, Zentralbl. f. Bakt. [Abt. 1] 35:221*), Bertarelli (*Experimentelle Untersuchungen und Beobachtungen über die Tollwut, Zentralbl. f. Bakt. 39:399*), Herrmann (*Lyssa-Virus im menschlichen Speichel, Ztschr. f. Immunforsch. 58:389, 1928*) and Palawandow and Serebrennaja (*Über das Wutvirus im menschlichen Speichel, Ztschr. f. Immunforsch. 71:350, 1931*) should be referred to. These authors found the virus frequently, but not regularly, in the salivary glands of human beings. Special attention should be directed to the information in the book by Kraus, Gerlach and Schwarzenberg (*Lyssa bei Mensch und Tier, Berlin, Urban & Schwarzenberg, 1926*) and especially to the work by Schwarzenberg (*Neuere Ergebnisse der Tollwutforschung, Ergebn. d. Hyg., Bakt., Immunitätsforsch. u. exper. Therap. 20:1-154, 1937*).

In the two last-mentioned works are included reports of cases and literature dealing with positive infections induced in animals used for vivisection purposes from the virus obtained from the saliva of persons who died of rabies.

W. PIRINGER, M.D., V
stria.

Medical Economics

OLD AGE AND SURVIVORS INSURANCE

Frank G. Dickinson, Ph.D., Director, Bureau of Medical Economic Research

In April 1948 the Advisory Council on Social Security submitted a report to the Senate Committee on Finance recommending expansion of the old age and survivors' insurance program. The Council found three major deficiencies in the existing system—inadequate coverage, unduly restrictive eligibility requirements and inadequate benefits. The proposed remedies included the immediate extension of coverage to self-employed persons, farm and household workers, employees of nonprofit institutions, federal civilian employees, railroad employees, members of the armed forces and employees of state and local governments; a lowering of the requirements for insured status to permit a larger proportion of older workers to qualify for benefits, and a liberalization of primary and family benefits, to apply to both present and future beneficiaries. The Advisory Council estimates that the level premium cost of its proposed program would be between 4.9 and 7.3 per cent of covered payroll as compared with an estimate of from 3.3 to 5.6 per cent for the present system. The expansion would be financed by an increase in employer and employee contribution rates from 1 to 1½ per cent of wages, to go into effect when benefits were liberalized. A subsequent increase to a 2 per cent rate and the addition of government contributions would be postponed until necessary to meet current costs of the program.

One month after submitting its proposals for the expansion of old age and survivors' insurance, the Advisory Council sent a second report to the Senate Committee on Finance recommending the adoption of a permanent and total disability insurance program. Of the Council's seventeen members, fifteen supported a strictly circumscribed program, to be integrated with old age and survivors' insurance and to cost an estimated 0.1 to 0.25 per cent of covered payroll. The remaining two members favored a plan of state assistance for the totally disabled involving federal grants.

Summary of Majority Recommendations

1. To qualify for disability benefits, an otherwise eligible person should be required to have (a) a minimum of 40 quarters of coverage, (b) 1 quarter of coverage for every 2 quarters after 1948 or attainment of age 21 and prior to the first quarter of total disability, (c) 6 quarters of coverage within the 12 quarters preceding the disability, and (d) 2 quarters of coverage within the 4 quarters preceding the disability.

These requirements are designed to insure that benefits would be paid only to persons recently and substantially attached to the labor market and consequently suffering loss of earnings due to disability. Retroactive payments would be limited to the six month period preceding the filing of a claim.

2. For purposes of the program, "permanent and total disability" would be defined as "any disability which is medically demonstrable by objective tests, which prevents the worker from performing any substantially gainful activity, and which is likely to be of long-continued and indefinite duration." Qualified persons would receive their first benefit after a waiting period of six months.

The strict definition of compensable disability and the long waiting period are intended to discourage would-be malingers who might give up work in order to qualify for benefits. Unlike many disability insurance plans, the proposed program does not assume permanency after a specified period of total disability and does not compensate workers who retain substantial earning capacity in any occupation.

3. The primary benefit would equal 50 per cent of the first \$75 of average monthly wage and 15 per cent of the remainder

up to \$275. No benefits would be paid to dependents of disabled workers.

Under the proposed formula, disability benefits would average about 30 per cent of average monthly wage up to \$350 and would in no case exceed one half of average monthly wage. Family benefits were excluded in order to preserve the economic incentive to self support.

4. Claims would be disallowed if the claimant refuses to submit to medical examination. Beneficiaries would be reexamined at least once a year; payments would be terminated if the beneficiary refused reexamination or was found to be fit for gainful employment.

5. Permanent and total disability insurance benefits would be suspended for any period in which Workmen's Compensation benefits are payable; disabled workers eligible for benefits under the proposed program and another federal disability program would receive only the larger benefit.

6. The effective date for payment of first benefits under the disability insurance program would be one year after the effective date for extension of coverage under old age and survivors' insurance.

The proposed postponement is designed to permit the Social Security Administration to solve the problems of coverage extension before tackling the administration of disability insurance. Moreover, the delay would allow time for preparation of regulations and procedures, recruitment and training of personnel, and education of the public in its new rights under the program.

7. Rehabilitation services would be furnished to disability insurance beneficiaries when it is probable that they will assist the beneficiary to return to gainful work.

The Council recommends the use of facilities set up under the current federal-state rehabilitation program. Payments from the old age and survivors' insurance trust fund would be made to state rehabilitation agencies in return for medical and surgical treatment and vocational retraining of disability insurance beneficiaries. These services are designed to reduce the ultimate cost of the program and to benefit the national economy by increasing the labor force.

The administration of permanent and total disability insurance, as pictured by the Advisory Council, would make use of the decentralized machinery set up under old age and survivors' insurance. Field offices, regional staffs and area offices would handle claims, while the central authority would limit itself to the supervision of policy. Old age and survivors' insurance wage information would be used to determine insured status and amount of benefits under the disability insurance program; periods of total disability would not be counted in computing retirement and survivors' benefits. All claimants would undergo a medical examination, conducted through federal facilities where available or through contract arrangements with private physicians, clinics and state and local hospitals. Physicians would be paid on a fee basis, and regional or area medical representatives would maintain relations with local practitioners. Area offices would evaluate and review the claimant's disability in terms of his capacity for gainful activity and would determine the frequency of reexamination. Claimants recommended for rehabilitation would be referred to the state rehabilitation agency, which would report progress to the social insurance system; benefits would be suspended if the claimant refused rehabilitation measures.

Criticism of Proposals

The Advisory Council's report includes a memorandum of the dissent by two of its members who favor provision for total disability through state assistance. Attention is called to the fact that the states already have agencies close to the disabled in their homes, with facilities for retraining, rehabilitation, reemployment and institutionalization. The suggested state plan would emphasize medical and vocational retraining rather than cash benefits, and would be financed by local tax funds supplemented by federal grants.

The dissenting members of the Council fear that a federal system of disability insurance would be subject to political pressures which would lead to excessive costs and unjustified expansion. Aside from the possibility of maladministration, there is considerable doubt as to whether disability is an insur-

able risk. Life insurance companies providing disability income benefits during the 1920's experienced large and increasing losses, culminating in the depression when disability rates reached a peak. Since that time, many of the companies have not offered disability protection; the remainder sell disability income insurance to carefully selected male applicants on a highly restricted basis and at high rates of premiums.

There are several reasons for predicting that the costs of federal disability insurance would exceed those of private insurance. Careful selection of risks is a prime factor in controlling the disability rate; yet a federal system must insure all persons within the scope of the program regardless of risk. Private insurance companies now provide disability coverage only to age 55; the proposed federal system would cover persons up to age 65. Almost all private companies limit disability coverage to men; in 1944, 40 per cent of the workers under Social Security were women. Disability rates during the depression rose less under ordinary insurance than under group insurance, which was issued on a wholesale basis without selection of risks.

A second major factor in determining the costs of disability insurance is the attitude toward admission of claims. As the dissent states, "In the federal system there would be strong pressure against, and little incentive for sound administration of claims." Unlike old age and survivors' insurance, determination of eligibility under a disability program would require considerable administrative discretion. Many unjustified claims would be made, especially during depressions when tax-free benefits would be more secure than wages and might be as attractive as net earnings after deduction of taxes, union dues, insurance contributions and the costs of transportation, meals and work clothes. This is especially true in the case of partial disability or failing efficiency, when the worker's earning power might be lower than the benefit payments based on prior earnings. On the administrative side, a liberal attitude toward admission of claims could be expected. Local administrators would probably be generous with the ample funds furnished from the old age and survivors' insurance reserve fund and, with the addition of a government contribution, from general revenues. Congressmen would be subject to pressure from constituents attempting to have their claims approved. The system would offer great opportunity for political manipulations; the expression of a liberal attitude toward claims by a political party would gain it the votes of large numbers of actual and potential beneficiaries and their families.

The third administrative control on costs is the review of admitted claims. Despite the specified periodic medical examinations, many persons would continue to receive benefits after total disability had ceased to exist. The line between ability and inability to work is not always clear; economic motivation may be the determining factor for the worker, and a careful physician would feel obligated to give the insured the benefit of any doubt. Needless to say, any system which reduces the incentive to rehabilitation and self support is undesirable from a social as well as a financial point of view.

The dissenting members of the Council suggest that the proposed disability insurance plan may be merely an entering wedge and that benefits and eligibility rules would soon be liberalized. Experience both here and abroad indicates that social insurance systems have a tendency to progressive expansion. The programs are generally popular with the public, especially if the employer and the government pay a large part of the costs. An administrative bureaucracy is built up which has a strong personal interest in the growth of the system. Successful operation is considered as a signal for an increase in coverage, benefits and costs, while defects are remedied by an extension of governmental regulation and control. Because of the strict eligibility rules and modest benefits proposed for the disability insurance program, costs would probably be relatively low at the outset, especially if the present high level of employment continues. This initial experience is likely to precipitate a liberalization all along the line, with a consequent increase in the claim rate and a decline in the recovery rate. Addition of a federal contribution to pay the rising costs would be accompanied by a tightening of federal control and growing opportunity for political exploitation of the system.

Although the 80th Congress failed to act on the recommendations of the Advisory Council, the issue of federal disability insurance is far from dead. Proposals for the expansion of the Social Security system and the inclusion of disability protection can be expected to appear during the next legislative session. Persons and organizations concerned with the problem should be prepared to support the principle of government provision for the permanently and totally disabled or to offer substitute plans. In thinking through their positions, they would do well to keep in mind the dangers inherent in any program, no matter how modest at the outset, which sets up a far flung federal bureaucracy with extensive discretionary powers.

Medical Motion Pictures

FILM REVIEWS

The following 16 mm., color, silent, motion pictures are a portion of the Sarnoff Surgical Motion Picture Library, Brooklyn. Produced and prepared by Jacob Sarnoff, M.D., Brooklyn. Procurable on rental from: United World Films, Inc., 445 Park Avenue, New York 22.

Osteotomy for Prognathism. 740 feet (2 reels), showing time twenty-one minutes (sound speed). Produced in 1946.

This film demonstrates the method of correcting protruding jaws by sectioning the ascending rami of the mandible. Part I shows the steps on models, cadavers and by animated drawings. Part II depicts the operative procedure on a patient. Certain deficiencies in the film should be noted. The titles are too infrequent, which leaves the average viewer, untrained in this type of surgery, at a loss to understand some of the steps. Mention is not made of possible hazards and pitfalls such as bony nonunion or injury to the facial nerve, nor does the film account for potential trauma to the inferior alveolar nerves and vessels by traction when the mandible is mobilized posteriorly into its new position. This film would be of interest chiefly to plastic surgeons, but would be of value from the educational standpoint to be shown at county medical societies, if someone experienced in this field were present for the purpose of discussion. The motion picture ends its second reel with the statement, "End of Part II." It is suggested that the term "Finis" be substituted so as not to leave the viewer in suspense. The photography is good.

Inguinal Hernia with a Review of the Anatomy and Surgery. 825 feet (2 reels), showing time twenty-three minutes (sound speed). Produced in 1944.

This film is designed to demonstrate anatomic features and surgical technic in inguinal hernia. A poor impression is immediately created by an erroneous definition in which a hernia is defined as "a protrusion of intestine." Throughout the scenes depicting operative technic, the skin around the incision is not draped, but is left exposed, thus breaking one of the prerequisites in a surgical teaching film. The surgeon is rough in his technic and goes through maneuvers intended to demonstrate something, but without making the point clear. Very heavy surgical gut is used entirely, usually with the strands doubled. Apposition of various structures in the repair is carelessly carried out.

Photography changes from color to black and white so frequently throughout the film that attention is distracted. Changes in scenes are also frequent, and aimless shifting of anatomic structures are so common that it is frequently difficult to discern what is being demonstrated, particularly since labels or descriptive text in the motion picture is almost totally lacking. The exposure in some scenes is good but in others so poor that structures are not well identified. The copies of drawings are overexposed. The lack of advance planning is evident in this motion picture.

Appendicitis. 490 feet (1 reel), showing time thirteen minutes (sound speed). Produced in 1943.

This film contains data on surgical pathology and operative technic. The author has obtained several good specimens illustrating various types of lesions, but information or descriptive material of the teaching type is not presented. During

the time when these specimens are photographed they are turned, shifted and "poked" so much that attention is distracted from the specimen itself.

The skin is not draped, but left exposed, thus breaking one of the prerequisites of a teaching film. Operative technic is careless; heavy surgical gut is used throughout, usually with the strands doubled. A sulfonamide powder is placed in the wound at the end of the operation, even though the appendix was not perforated or sufficiently inflamed to infect wound edges if they had been treated with average care. Since sulfonamide drugs are not being used much in that capacity during recent years, this procedure appears to date the film as not of recent production. Photography shifts from color to black and white. Most of the color photography is poor, the normal tissue color being preserved in comparatively a small portion of the film. Although considerable time must have elapsed during the period when the various specimens were collected, the rest of the film appears to have been made rapidly with little planning or thought given to the teaching value.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various Centers, Feb., June, and Sept., 1949. *Part II.* April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa. *Part III.* Boston & New York, Autumn. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral.* Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 18. *Oral.* Chicago, Oct. 13-15; Philadelphia, Nov. 3-5; San Francisco, date not set. Candidates not taking these special oral examinations will have no opportunity for admission next year. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Chicago, Oct. 6. *Written.* St. Louis, Oct. 15-19. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I.* Various Centers, April & May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Feb. 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18, Minn.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Examination, Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARIZONA: * Examination, Phoenix, Oct. 5-6. Endorsement, October. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * Little Rock, Nov. 4-5. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Elective Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral.* Los Angeles, Nov. 20-21. *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

CONNECTICUT: * Examination, Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homopathic Examination.* Derby, Nov. 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

FLORIDA: * Examination, Jacksonville, Nov. 28-30. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GEORGIA: Examination, Atlanta, Oct. 12-13. Endorsement, Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: Endorsement, Agaña, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

HAWAII: Examination, Honolulu, Jan. 10-13. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu 53.

IDAHO: Boise, Jan. 10-12. Dir., Bureau of Occupational Licenses, Miss Estella S. Mulliner, State House, Boise.

ILLINOIS: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Ruegg, Capitol Bldg., Springfield.

INDIANA: Examination, Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

IOWA: * Examination, Des Moines, Dec. 6-8. Endorsement, Des Moines, Oct. 4. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Examination, Louisville, Dec. 13-15. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

LOUISIANA: Examination, New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Iberia Bank Bldg., New Orleans 12. *Homopathic Examination.* Baton Rouge, subject to call. Sec., Dr. F. H. Hardenstein, 715 Pere Marquette Bldg., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Examination, Baltimore, Dec. 14-17. Endorsement, At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homopathic Examination.* Baltimore, Dec. 7-8. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Examination, Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. G. L. Schadt, 413 E. State House, Boston.

MICHIGAN: * Examination, Lansing, Oct. 13-15. Endorsement, Oct. 12. Sec., Dr. J. F. McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: Reciprocity, Jackson, Dec. 6. Exec. Officer, State Board of Health, Dr. Felix J. Underwood, Jackson.

MISSOURI: St. Louis, Oct. 25-27. Exec. Sec., Mr. John A. Hailey, P.O. Box 4, Jefferson City, Mo.

MONTANA: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW JERSEY: Examination, Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

NEW YORK: Examination, Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 23 South Pearl St., Albany 7.

OHIO: Examination, Columbus, Dec. 13-15. Endorsement, Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * Reciprocity, Oklahoma City, Oct. 24-25. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: * Examination, Portland, Jan. 1949. Endorsement, Oct. 15-16. Final date for filing application is Oct. 1. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Bldg., Portland.

PENNSYLVANIA: Examination, Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

RHODE ISLAND: * Examination, Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Endorsement, Oct. 4. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TENNESSEE: * Memphis, Sept. 29-30. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, Medical Arts Bldg., Fort Worth.

UTAH: Examination, Salt Lake City, July. Endorsement, Oct. 4. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: Examination, Burlington, Feb. Sec., Dr. F. J. Lawless, Richmond.

VIRGIN ISLANDS: Examination, Charlotte Amalie, Dec. 8-9. Comm., Dr. Christian R. Moorhead, Charlotte Amalie.

VIRGINIA: Examination, Richmond, Dec. 3-4. Endorsement, Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WEST VIRGINIA: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

WYOMING: Examination, Cheyenne, Oct. 4. Dir., Dr. Franklin D. Yoder, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARKANSAS: Examination, Little Rock, Oct. 5. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

CONNECTICUT: Examination, Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: Examination, Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

FLORIDA: Examination, Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: Examination, Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1510 West Allegan St., Lansing.

MINNESOTA: Examination, Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: Examination, Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: Examination, Portland, Dec. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: Examination, Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

SEATTLE, WASH. Sec., Dept. of Licenses, Miss Virginia

Milwaukee, Dec. 4. Final date for filing application is Nov. 27. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

215:363-478 (April) 1948

- *Histoplasmosis and Torulosis as Causes of Adrenal Insufficiency. A. J. Rawson, L. H. Collins Jr. and J. L. Grant.—p. 363.
- Recent Therapy in Traumatic Myositis Ossificans. E. A. Pohle and C. Tomlinson.—p. 372.
- Parathyroid: Study Based, in Part, on Sixty Postmortem Examinations with Presentation of Case of Hyperfunctioning Adenoma. H. U. Stephenson Jr. and W. L. McNamara.—p. 381.
- Occurrence of Gastric Neoplasms in Youth. M. Block, A. H. Griep and H. M. Pollard.—p. 398.
- Plasmocytoma (Multiple Myelomas, Kahler's Disease), and Its Attendant Disturbances in Protein Metabolism. W. J. Kolff and J. Dhont.—p. 405.
- Adenine: Its Failure to Stimulate Hemopoiesis or to Produce Pellagra in Case of Pernicious Anemia. R. E. Stone and T. D. Spies.—p. 411.
- Prothrombin Activity of "Stored Human Blood." F. J. Schilling, A. De Natale and L. A. Annil.—p. 415.
- Significance of Paucity of Sick Cells in Newborn Negro Infants. Janet Watson.—p. 419.
- Leukocytosis of Diabetic Acidosis. J. L. Tullis.—p. 424.
- Benign Idiopathic Spontaneous Pneumothorax: Review of 63 Cases. B. Hyde and L. Hyde.—p. 427.
- Pleuritic Pain: Use of Intravenous Calcium Gluconate in Its Relief. I. L. Bennett Jr. and W. Latham.—p. 431.
- *Central Nervous System Involvement During Mumps. J. W. Brown, H. B. Kirkland and G. E. Hein.—p. 434.
- Hormonal Hypertension and Nephrosclerosis as Influenced by Diet. P. Dontigny, E. C. Hay, J. L. Prado and H. Selye.—p. 442.
- Management of Tetanus with Curare: Report of 2 Cases. E. M. Ory and L. A. Grossman.—p. 448.
- Calcareous Aortic Stenosis and Coronary Artery Disease. M. J. Horan Jr. and A. R. Barnes.—p. 451.
- Statistical Study of Hematologic Variables in Subjects with Thalassemia Minor. W. N. Valentine and J. V. Neel.—p. 456.
- Some Problems in Biology of Syphilitic Infection. J. H. Stokes and H. Beerman.—p. 461.
- Fascial Restorations in Medical Practice. A. M. Brown.—p. 470.

Histoplasmosis and Torulosis as Causes of Adrenal Insufficiency.—Rawson and his associates point out that certain fungus diseases may produce the syndrome of insufficiency of adrenal hormones by means of massive destruction of the adrenal glands. Despite their relative infrequency, histoplasmosis and torulosis should be kept in mind in any differential diagnosis of adrenal insufficiency. Literature contains 19 cases of involvement of the adrenals by *Histoplasma capsulatum*. One case is described in this paper. Twelve of the 19 cases showed some destruction of the adrenal parenchyma, and in 9 this destruction was of such magnitude that death was presumably due to adrenal insufficiency. Involvement of the adrenal by *Torula histolytica* has been noted far less frequently. Only 8 such cases have been reported. Only 2 of these showed any necrosis, and in only 1 (reported in this paper) was there necrosis extensive enough to produce the syndrome of adrenal insufficiency. Excessive weakness appears to be the earliest symptom of adrenal destruction caused by these two diseases.

Central Nervous System Involvement During Mumps.—Brown and his associates studied the incidence and characteristics of involvement of the central nervous system in 77 consecutive cases of mumps in which examinations of the spinal fluid were made. Pleocytosis with 10 or more cells per cubic millimeter was present in the spinal fluid of 26. Clinical manifestations of meningoencephalitis were recognized in 9 cases. These were mild in all but 1 patient. This patient suffered disabling residual damage to the nervous system which has persisted for three and one-half years.

American Journal of Medicine, New York

4:627-788 (May) 1948

- Physiologic Problems in Aviation. H. S. Wigodsky and J. H. Tillisch.—p. 629.
- Medicine in Aviation. J. H. Tillisch and F. R. Guilford.—p. 633.
- Neuropsychiatric Problems of the Flyer. R. C. Anderson.—p. 637.
- Use of Drugs at High Altitude. P. K. Smith.—p. 645.
- Treatment of Airsickness with Drugs. P. K. Smith.—p. 649.
- Quantitative Estimation of the Albumin and Gamma Globulin in Normal and Pathologic Cerebrospinal Fluid by Immunochemical Methods. E. A. Kabat, M. Glusman and Vesta Knaub.—p. 653.
- Serum Proteins in Syphilis. Electrophoretic Study. E. P. Benditt and S. A. Walker.—p. 663.
- *Penicillin-Resistant Non-Hemolytic Streptococcal Subacute Bacterial Endocarditis. W. H. Clark, S. Bryner and L. A. Rantz.—p. 671.
- *Expulsion of Group A Hemolytic Streptococci in Droplets and Droplet Nuclei by Sneezing, Coughing and Talking. M. Hamburger Jr. and O. H. Robertson.—p. 690.
- Changes in Bacterial Flora of Throat and Intestinal Tract During Prolonged Oral Administration of Penicillin. M. O. Lipman, J. A. Coss Jr. and J. H. Boots.—p. 702.
- Prolonged Administration of Penicillin in Arthritis. J. A. Coss Jr., E. Bauman, R. H. Boots and Miriam Olmstead Lipman.—p. 710.
- Oral Penicillin in Treatment of Various Bacterial Infections. J. A. Robinson, H. L. Ilirsch and H. F. Dowling.—p. 716.

Penicillin-Resistant Nonhemolytic Streptococcal Bacterial Endocarditis.—Clark and his associates report 9 cases of nonhemolytic streptococcal subacute bacterial endocarditis requiring treatment with from 1,000,000 to 12,000,000 units of penicillin daily. Eight of these patients recovered. The in vitro sensitivity of the causative organism to penicillin should, if possible, be determined before therapy is instituted. The initial daily dosage of penicillin should be based on these studies. Patients with sensitive organisms should receive at least 500,000 units per day. When the causative organism is moderately or markedly resistant, 1, 5, 10 or even 20 million units should constitute the daily dosage. Treatment should be continued for approximately four weeks. More prolonged therapy is usually unnecessary if adequate amounts of penicillin are used. Increased resistance of the organism to penicillin may develop under prolonged subcurative dosage. The daily penicillin dosage should be increased five to ten fold if the circulating blood is not promptly sterilized or if relapse occurs. There will be instances of unnecessarily intensive therapy, but arrest of the infection should more nearly approach 100 per cent. The drug may be effectively administered by continuous drip or intermittent intramuscular injections. The latter method is more simple. Large individual doses of crystalline penicillin can be given with minimal local discomfort. The use of anticoagulants is not indicated. Streptomycin may advantageously be used alone or simultaneously with penicillin in some cases of extremely resistant organisms.

Expulsion of Group A Hemolytic Streptococci by Sneezing, Coughing and Talking.—Hamburger and Robertson determined the numbers of beta and alpha streptococci discharged into the air of an experimental room during sneezing, coughing and talking in a series of 48 carriers of group A streptococci. By simultaneous employment of exposed blood agar plates placed on the floor and "broth bubbler" samplers whose intake was 3 feet (91.4 cm.) from the floor, streptococci expelled in large, rapidly falling droplets could be differentiated from those discharged as droplet nuclei which remained in the air for at least several minutes. The material dispersed into the air during a sneeze is chiefly saliva. Four dispersion patterns of beta hemolytic streptococci by sneezing were evident. In the most common, moderate numbers were expelled in large droplets which fell rapidly to the floor 1.5 feet (45.7 cm.) from the sneezer. In one of two less common patterns, small numbers of beta streptococci were sneezed as droplet nuclei. The material expelled during coughing apparently originates in the back of the throat or below the epiglottis and contains little if any saliva. Only one of 20 carriers coughed large numbers of beta streptococci into the air as droplet nuclei or in large droplets. Ninety-five per cent of the carriers coughed few or no streptococci. Practically no streptococci were recovered from the air of rooms while carriers counted out loud for five minutes. Although sneezing probably accounts for a certain

number of sporadic cases of the hemolytic streptococcal infection, it is not important in epidemics. The rare carriers whose sneezes heavily contaminate the air may be dangerous if they do not baffle the sneezes efficiently. Since the material atomized in a sneeze is saliva, these persons represent a type of dangerous carrier whose nose culture may be negative. Coughing, likewise, is important only in sporadic infections. Talking expels negligible numbers of hemolytic streptococci.

American J. Obstetrics and Gynecology, St. Louis

55:551-732 (April) 1948. Partial Index

- Observations on 13 Cases of Late Extrauterine Pregnancy. H. H. Ware Jr.—p. 561.
- *Treatment of Pelvic Endometriosis. H. E. Schmitz and Janet E. Towne.—p. 583.
- Fifty-Four Deaths Occurring in Pregnant Patients Who Had Hypertension. R. A. Ross, S. S. Lambeth, W. L. Thomas and F. B. Carter.—p. 591.
- Blood Platelet Studies During Pregnancy and the Puerperium. C. V. Ward and J. L. MacArthur.—p. 600.
- *Hyperthyroidism and Pregnancy. R. D. Mussey, S. F. Haines and E. Ward.—p. 609.
- Immediate Postpartum Hemorrhage Due to Retained Secundines. B. H. Carroll, H. H. Meier and O. H. Stone.—p. 620.
- Factors in Treatment of Chorionepithelioma. A. W. Holman and Elizabeth H. Schirmer.—p. 629.
- Influences of Posture on Urinary Tract in Pregnancy. J. Parks and M. A. Puzak.—p. 636.
- Hysterectomy: A Study Based on 266 Personal Operations Performed in 1945 and 1946. L. E. Phaneuf.—p. 646.
- Diverticulitis: Symptoms, Complications, and Management, Particularly in the Female. V. S. Counsellor.—p. 653.
- Fetal and Neonatal Mortality: Causes and Prevention. W. F. Mengert.—p. 660.
- Carcinoma of Cervix in an Urban Population. A. W. Diddle and T. R. Bennett.—p. 669.
- Staphylococcus Aureus Hemolyticus Puerperal Mastitis and Infections of Newborn. L. R. Pyle.—p. 676.
- Hysterostomy. L. H. Douglass and J. H. Graves.—p. 683.
- Vaginal and Rectal Pruritus—Etiology and Treatment. E. L. Cornell.—p. 691.

Treatment of Pelvic Endometriosis.—According to Schmitz and Towne endometriosis occurs in women at the height of their sex life and is a major cause of sterility. At their clinic it has been the aim to preserve ovarian function and to permit childbearing. A review of 130 patients treated with this intent shows that 57 were treated by surgical procedure. Ten required removal of both ovaries with or without the uterus. Forty-seven had one or both ovaries preserved, and 11 later conceived, giving birth to 13 infants. Roentgen therapy was employed in 29 cases, in 17 of which sufficient dosage to cause permanent menolysis was given. Twelve patients were treated with smaller dosage, causing a menolysis of three to eight months. In this group 2 conceived and delivered 3 infants. Roentgen therapy in this group proved satisfactory for secondary therapy when conservative surgical treatment had failed. Roentgen therapy of sufficient intensity to destroy ovarian function is indicated in cases in which endometrial tissue has invaded the bowel or bladder. It makes surgical resection with its increased risk unnecessary. Watchful expectancy or male hormone therapy is of value in young women with minimal disease and symptoms. It enables one to postpone more radical procedures to the years when such therapy is less costly.

Hyperthyroidism and Pregnancy.—Mussey and his associates state that of 30 pregnant women who received treatment for complicating hyperthyroidism at the Mayo Clinic, oral administration of strong solution of iodine U.S.P. (Lugol's solution) and thyroidectomy were used for hyperfunctioning adenomatous goiters, and Lugol's solution plus thyroidectomy, if needed, for exophthalmic goiter. Pregnancy did not seem to influence the course of hyperthyroidism in most cases. Likewise, proper treatment of the hyperthyroidism allowed the pregnancy to proceed normally. The authors are of the opinion that the standard treatment of hyperthyroidism by iodine and thyroidectomy can be carried out safely in the great majority of cases of hyperthyroidism complicating pregnancy. More information is needed about the effects of antithyroid drugs and of radioiodine before these methods can be used for treatment of hyperthyroidism in pregnant women.

American Journal of Physiology, Baltimore

152:219-470 (Feb.) 1948. Partial Index

- Neural Responses and Reactions of Heart of a Human Embryo. W. E. Garrey and S. E. Townsend.—p. 219.
- Observations on Energy Metabolism and Water Balance of Men Subjected to Warm and Cold Environments. C. R. Speakman, W. Yamamoto, E. W. Bixby and M. Newton.—p. 233.
- Reactions of Men Exposed to Cold and Wind. S. M. Horvath.—p. 242.
- Effects of Acute Exposure to Simulated Altitudes on Dextrose Tolerance and Insulin Tolerance. V. C. Kelley and R. K. McDonald.—p. 250.
- Histochemical Study of 'Alkaline' Phosphatase of Kidney of Castrated Mouse After Stimulation with Various Androgens. C. D. Kochakian.—p. 257.
- Vitamin A, Iodide and Thyrotropic Hormone Content of Anterior Pituitary. D. P. Sadhu.—p. 263.
- Shrinkage of Lymphatic Tissue in Rats Following Injections of Insulin. I. T. Zeckwer.—p. 267.
- Interrelationships of Spermatozoa Count, Hyaluronidase Titer and Fertilization. B. Sallman and J. M. Birkeland.—p. 271.
- Effect of Folic Acid and Liver Extract on Serum and Red Cell Cholinesterase Activity. A. M. Kunkel, S. Krop and W. C. Wescoe.—p. 309.
- Specific Sympathomimetic Substance in Brain. W. Raab.—p. 324.
- Coronary Sinus Catheterization for Studying Coronary Blood Flow and Myocardial Metabolism. W. T. Goodale, M. Lubin, J. E. Eckenhoff and others.—p. 340.
- Normal Human Arterial Oxygen Saturation Determined by Equilibration with 100 Per Cent O₂ in Vivo and by Oximeter. J. H. Comroe and Patricia Walker.—p. 365.
- Studies of Pulmonary Circulation at Rest and During Exercise in Normal Individuals and in Patients with Chronic Pulmonary Disease. R. L. Riley, A. Himmelstein, H. L. Motley and others.—p. 372.
- Quantitative Studies on Comparative Activity of Calcium and Chemically Related Ions on Coagulation of Blood. M. Stefanini and A. J. Quick.—p. 389.
- Limitations of Renin-Hypertensin Hypothesis. E. Mylon, M. Lund and J. H. Heller.—p. 397.
- Effect of Pulmonary Artery Ligation on Histamine Content of Lung, with Observations on Concomitant Structural Changes. G. E. Lindskog and A. Gilman.—p. 417.
- Brain and Muscle Potassium in Relation to Stressful Activities and Adrenal Cortex Function. H. Hoagland and D. Stone.—p. 423.

American Practitioner, Philadelphia

2:567-634 (May) 1948

- Indigestion: Problem of Office Practice. H. M. Winans.—p. 567.
- *Massive Dose of Penicillin in Chronic Asthmatics. A. Sterling, A. E. Fishman and F. Sharps.—p. 570.
- Real Removal of Focal Infection as Cause of Ocular Disorders. M. Solis-Cohen.—p. 576.
- Pruritus Ani. L. G. Bodkin.—p. 580.
- Physiologic Changes Accompanying Pulmonary Congestion. H. E. Heyer.—p. 582.
- Common Congenital Deformities of External Ear and Their Plastic Correction. R. S. Rosedale.—p. 587.
- Appraisal of Penicillin Ointments in Diseases of Skin. N. Tobias and J. M. Greenhouse.—p. 589.
- Infiltration of Lungs with Eosinophilia (Loeffler's Syndrome): Case Report. J. R. Hendon.—p. 592.
- Placenta Previa. A. L. Dippel.—p. 597.
- Significance and Frequency of Benign Polyps of Colon and Rectum. N. W. Swinton.—p. 603.
- Skin Manifestations of Rheumatic Fever. G. C. Griffith.—p. 622.
- Clinical Studies of Circulation. S. S. Kety.—p. 625.
- Pulmonary Embolism in Relation to Medical Disease. T. G. Connelly.—p. 631.

Massive Dose of Penicillin in Chronic Asthma.—Sterling and his associates review observations on 15 patients with chronic asthma, in the majority of whom asthma had existed for over eight years. The patients had received general medical care and specific allergic treatment with pollen, dust and vaccine, when indicated, for at least six months to two years without marked improvement. Amorphous or crystalline penicillin, dissolved in isotonic sodium chloride solution, was injected intramuscularly every three hours. The initial dose was 10,000 units every three hours, increased daily if no local or constitutional reactions occurred to the penicillin. The second day 25,000 units was given every three hours. The next three days 50,000 units and then 100,000 units was given every three hours until a total dosage of 5,000,000 units or more had been reached. In 3 of the 15 cases, treatment was stopped because of severe reactions. The results were excellent in 3, good in 4 and fair in 1 of the patients who had completed the course of treatment with penicillin. The other 4 remained unimproved. The authors feel that one should not hesitate to use massive doses of penicillin in cases of intrinsic chronic bronchial asthma. The benefit to some patients is striking.

Archives of Neurology and Psychiatry, Chicago

59:141-272 (Feb.) 1948

- Schistosomiasis of Central Nervous System: Experiences in World War II and Review of Literature. C. A. Kane and H. Most.—p. 141.
 *Insulin Subshock (Subcoma) Treatment of Psychoses and Psychoneuroses. D. J. Sullivan.—p. 184.
 Etiology of Optochiasmatic Arachnoiditis. W. L. Bruetsch.—p. 215.

Insulin Subshock in Psychoneuroses.—Sullivan states that treatment with insulin given by the intensive subshock technic is effective in producing not only symptomatic improvement but also remission, and perhaps some recoveries, in many of the psychotic patients seen in the Army. The intensive insulin subshock technic is effective with certain types of severe psychoneuroses. The author reviews the results obtained by himself and by other psychiatrists in Army hospitals. The majority of the patients treated had a diagnosis of "psychosis, unclassified, acute schizophrenic reaction." In most of these patients the disease showed considerable improvement or was in remission. Many of the patients had been psychotic three or four months before reaching the hospital from overseas. Despite such a long duration of symptoms, the majority still responded well. Intensive insulin subshock therapy consisting of adequate subshock reactions twice a day, seven days a week, for three weeks, should be used in treatment of all psychoses with schizophrenic symptoms. Intensive insulin subshock therapy should be used with all psychoneurotic states of the severe anxiety-tension type, psychoses with features of depression and psychoses of mixed type. When psychoses do not respond satisfactorily to intensive insulin subshock therapy a course of at least twelve electric shock treatments should be given (one treatment three times a week); this will increase the over-all rate of improvement and remission to 90 per cent. Intensive insulin subshock therapy is a relatively safe procedure and can be carried out in a group setup in which 20 to 30 patients are cared for by two nurses and five attendants. This personnel can be trained to recognize the signs and symptoms of reaction to insulin and the proper point at which to terminate the insulin subshock reaction by oral administration of sugared orange juice or intravenous injection of hypertonic dextrose solution. The proper point at which to terminate the subshock reaction is when the patient can barely be roused or shows evidence of impending convulsion.

Archives of Pediatrics, New York

65:175-238 (April) 1948

- *Staphylococcal Meningitis: Its Rarity in Newborn. Review of Literature. Report of Three-Day-Old Infant with Recovery. A. L. Hoyne and R. H. Brown.—p. 175.
 Rice Sensitivity in Children. L. Sloboody, S. Untracht and F. Hertzmark.—p. 183.
 Appendicitis in Infancy: Report of Case. E. Kellert and A. Dumouchef.—p. 194.

Staphylococcal Meningitis.—According to Hoyne and Brown meningitis is uncommon during the first few weeks of life. Staphylococci are infrequent invaders of the meninges as evidenced by the fact that only 1 of 81 cases of meningitis in infants less than 2 weeks of age reported in the literature was of staphylococcal origin; it terminated fatally. Among all forms of meningitis in patients less than 2 weeks of age, there were only 7 recoveries. The authors report 1 case of meningitis due to Staphylococcus aureus in a 3 day old boy who was born of a primipara mother after an uneventful pregnancy. The infant was normal at birth. Delivery was by forceps, but there was no evidence of injury. The diagnosis was confirmed by positive cultures for hemolytic Staph. aureus from the spinal fluid and also from the blood. Sulfathiazole was given every four hours by mouth for fifteen days with a total dose of 15 Gm. During that period the highest blood level obtained for the drug was 4.0 mg. per hundred cubic centimeters. Sodium penicillin was administered by intramuscular route every two hours for two weeks with a total dose of 1,640,000 units. Both drugs were well tolerated. Twenty days after admission the infant was discharged as fully recovered. The method employed in the treatment of this infant emphasizes that neither intrathecal therapy nor frequent lumbar punctures are necessary for promoting recovery in meningitis.

Bulletin New York Academy of Medicine, New York

24:273-338 (May) 1948

- Use of Radioactive Iodine in Diagnosis and Treatment of Thyroid Diseases. J. H. Means.—p. 273.
 Critical Evaluation of Thiouracil and Newer Related Compounds in Treatment of Thyroid Disease. D. P. Barr.—p. 287.
 Certain Considerations in Application of Isotopes to Medical Problems. D. Stetten Jr.—p. 300.
 Evaluation of Vaccination Against Epidemic Influenza in Man. F. Blake.—p. 308.

Bull. of U. S. Army Med. Dept. Washington, D. C.

8:327-410 (May) 1948

- Nature of Arterial Hypertension. I. H. Page.—p. 367.
 Surgery of Mediastinal Tumors. W. Crandell.—p. 372.
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 Recent Advances in Hematology. L. Goldman.—p. 385.
 Osteomyelitis of Spine Secondary to Paravertebral Block. R. Brown and B. P. Hoffman.—p. 391.
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 Newer Aspects of Treatment of Peptic Ulcer. H. R. Liebowitz.—p. 402.
 Marking and Filing of Radiographs. F. L. LaVelle.—p. 408.

California Medicine, San Francisco

68:331-406 (May) 1948

- Responsibility of Medicine. J. W. Cline.—p. 331.
 Hypersensitivity, the Common Denominator of Collagenous Diseases. E. R. Evans.—p. 335.
 Early Diagnosis and Radical Treatment of Prostatic Carcinoma. F. Hinman Jr.—p. 338.
 Management of Acute Neck Infections. C. Hall.—p. 344.
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 Artificial Insemination. J. O. Haman.—p. 353.
 Original Technic for Surgical Correction of Deep Paravesical Diverticula in Bad Risks. P. A. Ferrier.—p. 347.
 Therapy of Proved Efficacy in Otiomycosis. B. L. Bryant.—p. 359.
 Leprosy in Los Angeles: Statistical Study of 75 Cases. S. S. Robinson and S. Tasker.—p. 362.
 Surgical Treatment of Mixed Tumors of Parotid Gland. E. G. Clausen and R. B. Henley.—p. 366.
 Review of Common Ocular Problems in Children. M. P. Koke.—p. 370.
 Reinfection in Syphilis. N. N. Epstein.—p. 374.
 Opisthotonos Fetalis in Breech Presentation: Report of Case with Bilateral Congenital Posterior Dislocation of Tibiae. G. F. Melody.—p. 378.

Canadian Medical Association Journal, Montreal

58:427-536 (May) 1948

- Contribution of Surgery to Medical Progress. J. Trueta.—p. 427.
 *Use of Artificial Kidney in Treatment of Uremia: Preliminary Report. J. T. MacLean, C. B. Ripstein, Nannie K. M. de Leeuw and G. G. Miller.—p. 433.
 *Chronic Hepatitis. J. M. Kilgour.—p. 437.
 Venography in Normal and Pathologic Leg. G. H. Raymond, G. T. Adams and J. R. McCriston.—p. 441.
 Two Newer Types of Implants Used After Enucleation. J. S. Crawford.—p. 444.
 New Parasympathetic Stimulant Ethyl 3:3 Dimethylallyl Barbituric Acid: I. Its Effect on Gastric Secretion. C. M. Ballem, R. L. Noble and D. R. Webster.—p. 447.
 Neurogenic Origin of Bladder Symptoms Following Proctectomy. I. B. Macdonald and C. Aberhart.—p. 450.
 Psychology in Modern Industry. R. B. Malmo.—p. 452.
 Problems in Treatment of Carcinoma of Rectum. C. Gardner.—p. 454.
 Traumatic "Unconsciousness"—A Clinical Misnomer: Present Concepts of States of Impaired Consciousness. N. Delarue.—p. 457.
 Organization and Experience of a Large Industrial Medical Department. K. E. Dowd.—p. 466.
 Influenza Meningitis. H. S. Little.—p. 469.
 *Series of Cases of Painful Back. J. A. Noble.—p. 473.
 Electric Shock Therapy in a Private Psychiatric Hospital. A. L. MacKinnon.—p. 478.
 *Human Relations and Industrial Health. W. Line.—p. 484.
 Management of Atopic Eczema Cases in Infancy and Childhood. J. R. Ross and A. Brown.—p. 486.
 Non-Specific Urethritis and Prostatitis. E. L. Morgan.—p. 490.

Artificial Kidney in Uremia.—MacLean and his associates describe the technic of the use of the artificial kidney and discuss the effects of the dialysis on the patient. They report 3 patients in whom the artificial kidney was employed. The artificial kidney appears to be an effective method for removing waste products from the blood in uremia. Its clinical usefulness, in theory, is limited to those patients in whom the renal damage is temporary or reversible. It provides a means of saving such patients from death. It is well tolerated by the patient and apparently causes few harmful effects. The apparatus has a large field as an investigative tool. It should prove valuable in studying uremia because some "toxic" factor appears to be

removed from the blood and may be present in the filtrate. In addition it is a good method for studying the metabolism of various diffusible substances in the experimental animal and in human subjects.

Chronic Hepatitis.—According to Kilgour, the exact incidence of chronic hepatitis is most difficult to assess. Various estimates suggest that from 10 to 20 per cent of acute cases show activity for longer than four months, but experience in large epidemics indicates that this estimate is probably high. The author reports 4 patients who have had active hepatitis for thirty to thirty-six months. One apparently is recovering without clinical evidence of cirrhosis. The other 3 show clinical evidence and 1 histologic evidence of hepatic cirrhosis. Of the cases believed to be of cirrhosis one is apparently arrested, another improving, but the third presents the clinical picture of Hanot's cirrhosis; namely, chronic jaundice with enlargement of the liver and spleen but without ascites. The syndrome of chronic hepatitis may follow either epidemic infectious hepatitis or homologous serum hepatitis. It is particularly liable to follow cases of the acute disease which have been allowed to return to activity before recovery is complete or in patients who have been undernourished, affected with concurrent disease or subjected to trauma or surgical operations at the time of these factors. The actual cause of the prolongation of the hepatitis is unknown. Complete recovery occurs in the great majority, but in a small percentage the disease progresses to cirrhosis. It is possible that the progress may be arrested and complete functional recovery occur, even though cirrhosis has developed, but as yet insufficient time has elapsed to exclude relapse in the cases reported. The most effective treatment at present is prolonged rest and maintenance of optimum nutrition until all clinical and laboratory evidence of activity has disappeared.

Painful Back.—The 104 cases reviewed by Noble concerned men who applied to a Department of Veterans' Affairs for relief of painful back. The average age was 33. There were only 6 over 50 years. The intervertebral disk was involved in 42 cases. Postural strain, arthritis, spondylolisthesis, traumatic strain, spondylitis, tuberculosis, fibrositis and bone injury were some of the other etiologic classifications. Many cases of backache were improved by the lumbosacral brace. In particular, in patients who have had a laminectomy without subsequent fusion and who have residual symptoms referable to the back, the brace may afford considerable relief. Operations were performed on 26 of the 42 patients with disk lesions. In 5 of the 26 cases operated on, no disk protrusion was found. Sixteen of the 26 patients operated on were sufficiently restored to go back to work, but 14 of them could do only light work and only 2 could resume full duty. Of the 16 patients with disk lesions treated conservatively 11 could do light work and 4 could return to full duty; one could not be traced. Thus when a protruded intervertebral disk can be diagnosed operation may not necessarily restore the patient. A study of the nature of the trauma resulting in chronic pain in the back suggests that the best treatment may well be some form of prevention. The human species has a constitutional weakness at the lumbosacral junction. In order to compensate for this deficiency, postural training is required.

Human Relations and Industrial Health.—Line contends that present day circumstances in industry place an obligation on the medical profession, which it met during the war in the armed forces. In some respects the demand is more pressing, if only by virtue of the fact that whereas in the service there was a oneness of purpose, in industry there are two groups—workers and management. There is a great difficulty in communication between these two groups. Medicine has developed a high degree of skill in relieving the tensions of the maladjusted and alleviating the stress of individual situation-complexes by changes in the immediate social milieu. It has pointed up the significant fact that the work situation, the vocation, is all-important in determining personal mental health and has demonstrated the causal connection between interpersonal stress and labor management problems. The author directs attention to the influence of psychologic medicine in bringing about a revolution in the social sciences. It has demonstrated over and over again the dynamic sequence of authority, rejection,

hostility, guilt; and the consequent vicious circle. Difficulties of communication between industrial groups are being clarified by such researches as those of Elton Mayo, the Hawthorne researchers and the Chicago Committee of Industrial Relations. In industry medicine is able to assume a nonpartisan role in a worker-management society.

Delaware State Medical Journal, Wilmington

20:65-84 (April) 1948

*Severe Systemic Sarcoidosis with Ascites and Splenomegaly. R. A. Mino, R. W. Frelick, A. I. Murphy Jr. and J. W. Hooker.—p. 65.

*Diverticula Arising at Pharyngoesophageal Junction: Discussion of Disease and Presentation of Unusual Case. R. A. Mino and A. I. Murphy Jr.—p. 75.

Severe Systemic Sarcoidosis.—Mino and his co-workers report 1 case of Boeck's sarcoid in a Negro woman aged 26 years with evidence of involvement of skin, lymph nodes, lungs, spleen, liver and pancreas and with presumptive involvement of heart, spinal cord and bone marrow. There was also massive enlargement of the liver with ascites and enormous enlargement of the spleen. Gratifying symptomatic relief of ascites, dyspnea and abdominal discomfort was afforded the patient by splenectomy and splenorenal venous anastomosis. The removed spleen measured 28.0 by 18.5 by 12.0 cm. and weighed 2,250 Gm., apparently the largest spleen recorded in Boeck's sarcoid. The diaphragmatic surface of its capsule showed scattered fibrinous adhesions and focal areas of hyalocapsulitis. The prognosis must remain guarded despite the obtained improvement in slowly progressive cases of Boeck's sarcoid similar to the one reported.

Diverticula at Pharyngoesophageal Junction.—Mino and Murphy report 1 case of an unusually large pharyngoesophageal diverticulum in a Negro aged 52 years who was admitted to the Memorial Hospital in Wilmington, Del. The patient's weight had gone from 130 pounds (59 Kg.) to 94 pounds (42.6 Kg.) in five weeks. A large ovoid mass in the right mediastinum was demonstrated on roentgenologic examination. It contained both air and fluid. The right lung was compressed by the diverticulum. The esophagoscope entered directly into the blind sac, the lowest limit of which was 28 cm. from the level of the upper incisors. No distal esophageal lumen could be seen. A Witzel type jejunostomy was done with the patient under local anesthesia. During the next three weeks the patient gained 26 pounds (11.8 Kg.) on jejunostomy feedings. Five weeks after admission, mobilization and exteriorization of the diverticulum was performed; the diverticulum was observed to extend into the mediastinum. Ten days later the old wound was reopened, the diverticulum freed and excised. Ten days after the second operation the patient was started on fluids by mouth, and soon afterward he was placed on a soft diet. Eleven weeks after admission he was discharged to his home, where he has continued on a full diet.

Endocrinology, Springfield, Ill.

42:237-338 (April) 1948

*Use of Male North American Frog (*Rana pipiens*) in Diagnosis of Pregnancy. S. L. Robbins and F. Parker, Jr.—p. 237.

Experimental Diabetes Produced by Administration of Glucose. F. C. Dohan and F. D. W. Lukens.—p. 244.

Organ Weights of Rats Receiving Hormone Supplements During Recovery from Chronic Starvation. F. H. Quimby.—p. 263.

Effect of Vitamin Deficiencies in New Hampshire Chicks Injected with High Doses of Thyroxine. M. E. Haque, R. J. Lillie, C. S. Shaffner and G. M. Briggs.—p. 273.

Role of Bile in Absorption of Steroid Hormones from Gastro-Intestinal Tract. M. M. Hoffman, G. Masson and M. L. Desbarats.—p. 279.

Lymphocyte Discharge from Isolated Rabbit Spleen by Adrenal Cortical Extract. O. Hechter.—p. 285.

Splenic Lymphocyte Discharge Induced by Adrenal Cortical Hormones Under In Vivo Conditions. D. Stone and O. Hechter.—p. 307.

Effect of Removing Various Endocrine Glands on Hair Cycles of Black Rats. Sally H. Dicke.—p. 315.

Urethane-Induced Lymphopenia in Normal and Adrenalectomized Rats. A. Dury and E. D. Robin.—p. 320.

Frog Test for Pregnancy.—Robbins and Parker describe a new test for pregnancy utilizing the release of spermatozoa by the male *Rana pipiens* (common North American frog) on stimulation with mammalian chorionic gonadotropin. Its advantages are many. Small amounts (5 cc.) of whole urine can be

administered directly to each frog, making the test extremely simple. Reactions to positive urines develop sometimes within a half-hour and invariably within two hours, producing a test considerably faster than any previously described biologic test. The animals are widely available throughout the continental United States and as a result are extremely cheap; thus the cost of the test is most reasonable. To date a total of 122 samples of urine have been tested. Ten of these were obtained from normal girls having normal menses. The remaining 112 included 78 from women known to be pregnant and 34 from women with amenorrhea diagnosed not pregnant by the Aschheim-Zondek test or its Friedman modification. No false positive reactions were encountered. One false negative reaction occurred with a specimen of urine early in the period of gestation. The ease with which diagnosis of pregnancy can be established with this test makes possible its adoption in any laboratory. The rapidity that it affords makes of the test an emergency procedure of possible benefit in difficult diagnostic problems.

Florida Medical Association Journal, Jacksonville 34:575-632 (April) 1948

- Clinical Use of Streptomycin in Urinary Tract Disease. L. W. Hewitt and E. S. Gilmer.—p. 587.
Management of Perforating and Penetrating Wounds of Abdomen. H. M. Anderson, W. G. Harris and F. H. Bowen.—p. 590.
Typhus Fever: Report of 7 Simultaneous Cases in Ocala. H. L. Harrell and E. G. Peck.—p. 593.
Medical and Surgical Treatment of Conditions Involving Sight. N. S. Rubin.—p. 596.

34:633-698 (May) 1948

- Effects Resulting from Atomic Bomb Explosion. F. L. Price.—p. 651.
Cervical Lesions—Diagnosis of Malignant Disease by Vaginal Smear. L. T. Rector.—p. 654.
Medical Management of Essential Hypertension. M. S. Saslaw.—p. 657.

Gastroenterology, Baltimore

10:575-766 April 1948. Partial Index

- Color Photography Through Flexible Gastroscope. H. L. Segal and J. S. Watson Jr.—p. 575.
Peptic Ulcer and Functional Dyspepsia in the Armed Forces. M. H. Friedman.—p. 586.
Present Status of Vagotomy in Treatment of Peptic Ulcer. J. M. Ruffin and D. P. White Jr.—p. 607.
Aortic Aneurysms Simulating Organic Disease of Gastro-Intestinal Tract. S. Baer and S. A. Loewenberg.—p. 617.
Gallbladder Gas Gangrene. R. K. Brown and E. Milch.—p. 626.
Treatment of Chronic Ulcerative Colitis with Staphylococcus Autovaccine: Preliminary Report. W. A. Heazlett.—p. 634.
Prolapse of Gastric Mucosa Through the Pyloric Canal Into Duodenum: Report of 16 Cases Diagnosed Roentgenologically. I. H. Manning Jr. and G. P. Highsmith.—p. 643.
Sodium Carboxymethylcellulose: Laxative Effects in Clinical Use. J. Fittipaldi and P. L. Davis.—p. 667.
Observations on Etiology of Postoperative Gastritis. E. D. Palmer.—p. 671.

Gallbladder Gas Gangrene.—Brown and Milch cite reports which indicate that infection of the biliary tract with the organisms of gas gangrene occurs occasionally but is not frequent. Study of a consecutive series of 39 deaths following operations on the biliary tract at the Buffalo General Hospital showed that 6 apparently had infection with *Clostridium welchii*. Three of the patients undoubtedly died as a direct result of infection with *C. welchii*; in the other 3 cases, the infection may be considered as a major contributing cause of death. The authors report 1 of the 6 fatal cases and a history of a patient who survived. Infection with *C. welchii* is a considerable factor in mortality in surgery of the biliary tract, occurring more frequently than has been generally recognized. It can be suspected clinically, sometimes diagnosed roentgenologically, occasionally recognized at operation, and too frequently seen at necropsy. Since the necropsy findings may be confused with or obscured by postmortem change, blood cultures at the time of death are suggested. The occurrence of hematemesis in fatal cases, of "brown" vomitus in 2 others and of "black" stools in the patient who survived suggests that bloody vomitus may serve as a presumptive sign. The classical signs of gas gangrene appear later. The diagnosis of acute gaseous cholecystitis should be made by the roentgen shadow, and conservative treatment used, including penicillin and sulfonamide drugs. If the condition is encountered unexpectedly at operation, open packing of the wound seems wise. Routine use of gas gangrene antitoxin, roentgen therapy and sulfonamide drugs in connection with all

surgery of the biliary tract is unwarranted. The use of penicillin in all surgery of the biliary tract before, during and after operation might help prevent rekindling of the infection.

Prolapse of Gastric Mucosa.—Manning and Highsmith report 16 cases in which the clinical and roentgenologic findings were considered consistent with a diagnosis of prolapse of the gastric mucosa through the pylorus into the duodenum. No distinctive syndrome was found, but symptoms referable to the upper part of the gastrointestinal tract were present in all but 1 case. The characteristic roentgenologic finding consists of a circular, or irregularly circular, "mushroom" or "umbrella" filling defect in the base of the duodenal bulb, often associated with narrowing and elongation of the pyloric channel, and often with antral spasm and enlarged antral rugae. Uncomplicated cases of prolapsed gastric mucosa, especially when associated with hypertrophic gastritis, may be treated with a medical regimen. Surgical treatment, such as excision of the redundant mucous membrane and pyloroplasty, is indicated only in cases of pyloric obstruction, ulceration with recurrent hemorrhages, severe anemia due to chronic blood loss, polyp formation with malignant degeneration and suspected malignancy.

Geriatrics, Minneapolis

3:135-196 (May-June) 1948

- Emotional Problems of Elderly People. M. Gitelson.—p. 135.
Management of Descensus Uteri in the Aged. B. L. Cinberg.—p. 151.
Chronic Illness as Public Health Program. W. F. King.—p. 157.
Some Practical Aspects of Geriatric Ophthalmology. F. L. P. Koch.—p. 163.
Alcoholism in the Older Age Groups. R. V. Seliger.—p. 166.
Nitrogen Balance Studies Under Prolonged High Nitrogen Intake Levels in Elderly Individuals. W. B. Kountz, Lilli Hofstatter and P. Ackermann.—p. 171.

Hawaii Medical Journal, Honolulu

7:275-356 (March-April) 1948

- Practitioner and Specialist. P. S. Irwin.—p. 289.
Evolution of Human Posture. S. F. Stewart.—p. 291.
Possible Role of Poi in Epidemiology of Infectious Intestinal Diseases. G. Fung and O. A. Bushnell.—p. 296.
Therapy of Endocarditis. M. E. Berk.—p. 300.
Benadryl in Acute Lepa Reactions. Louise A. Box.—p. 303.
Hypnotism as Practical Therapeutic Procedure. B. Wedge.—p. 305.

Iowa State Medical Society Journal, Des Moines

38:181-230 (May) 1948

- Present-Day Problems in Field of Medicine. H. A. Spilman.—p. 181.
Medical Economics and Public Relations. J. E. Reeder.—p. 182.
Effect of Xanthine Derivatives on Prothrombin and Plasma Clotting Times in Dogs and in Human Subjects. Helen Holland and E. G. Gross.—p. 183.
Review of Endocrinology in Obstetrics and Gynecology. W. E. Brown and J. T. Bradbury.—p. 187.
Sedimentation Rate. D. J. Schissel.—p. 197.
*Contact Dermatitis Due to Streptomycin. S. I. Shapiro and R. G. Carney.—p. 204.

Contact Dermatitis Due to Streptomycin.—Shapiro and Carney report that at the State Sanatorium, Oakdale, Iowa, streptomycin has been used in the treatment of tuberculosis since February 1947. In the eight and one-half months prior to Nov. 15, 1947, approximately 40 nurses were engaged in the preparation and administration of streptomycin and the cleansing of syringes used for injection, without the recognized occurrence of dermatitis due to the antibiotic. After the change in the method of preparation necessitated by the increased amount of the product in each vial, 4 nurses out of 7 who engaged in its preparation had a contact dermatitis to streptomycin as indicated by a positive reaction to a patch test in each case. Even more striking is the fact that of the 7 nurses involved most of the preparation was done by 4, of whom 3 experienced the dermatitis. The authors point out that there is a possibility that contact sensitization will prevent future internal utilization of the antibiotic. Many of the nurses in tuberculosis sanatoriums are former patients. In the event of reactivation of their pulmonary tuberculosis, treatment with streptomycin might be indicated. Previous epidermal sensitization might result in the rapid establishment of a severe localized or generalized dermatitis contraindicating further use of the antibiotic. This probability renders them cooperative in attempts to prevent undue exposure to the drug. Such efforts consist in the use of rubber gloves and suitable technics of preparation and administration.

Journal of Aviation Medicine, St. Paul

19:61-136 (April) 1948

- Visual Examination of Flyers Returned from Combat. H. A. Imus.—p. 62.
- Observations of An Ophthalmic Examiner. B. J. Wolpaw.—p. 94.
- Deaths in Air Evacuation. J. N. Schaeffer.—p. 100.
- Flight Histories and Factors Related to Flight Histories of Group of Physically Deficient Aircraft Pilots. D. R. Brimhall.—p. 108.
- Application of War Research to Civil Aviation Medicine. H. S. Wigodsky.—p. 115.
- Development of Chemical Oxygen Generators for Use in Aircraft. G. A. Millikan and J. R. Pappenheimer.—p. 118.
- Aviation Training Jacket. R. C. Hovde.—p. 120.

J. Bowman Gray School of Med., Winston Salem, N.C.

6:37-76 (April) 1948

- *Serologic Changes Occurring in Primary Atypical Pneumonia of Undetermined Etiology. E. T. Marshall Jr.—p. 37.
- Etiologic Factors of Asphyxia Neonatorum. R. L. Means.—p. 48.

Serologic Changes in Primary Atypical Pneumonia.

—Marshburn demonstrates that of all the serologic changes occurring as a result of primary atypical pneumonia, the highest incidence of positive reaction follows the cold agglutination test. The value of the cold agglutination test in the ordinary cases of primary atypical pneumonia lies in the fact that it offers an objective means of confirming a diagnosis which can usually be made on the basis of the clinical picture, examination of sputum and roentgen findings. Significant titers of cold agglutinins are found consistently, and the level of the titer depends on the severity of the disease process. The majority of positive reactions to streptococcus MG agglutination tests occur in patients with significant cold agglutinin titers. A significant rise in virus-neutralizing antibodies occurs in the majority of cases when both agglutination reactions are positive. Therefore, positive reactions to the simpler tests for cold and indifferent streptococcus agglutinins might be provisionally considered as indicative of primary atypical pneumonia, when the history, physical findings and roentgen findings fit the picture, particularly if there is a rise in titer of these tests.

Journal of Immunology, Baltimore

59:1-108 (May) 1948. Partial Index

- Predisposition for Immunity. E. Carlucci.—p. 1.
- Lymphocytopenia in Rabbits Following Intravenous Injection of Influenza Virus. Susanna Harris and W. Henle.—p. 9.
- Improved Benzene Extracted Complement Fixing Antigen Applied to Diagnosis of Arthropod-Borne Virus Encephalitides. C. Espana and W. McD. Hammon.—p. 31.
- Studies on Interference Phenomenon with Certain Members of Psittacosis-Lymphogranuloma Group of Viruses. O. J. Golub and J. C. Wagner.—p. 59.
- Statistical Analysis of Factors Affecting Susceptibility of Chick Embryos to Eastern Equine Encephalomyelitis Virus. J. F. Crawley.—p. 83.
- Factors Influencing Selection of Complement-Fixation Method: I. Comparison of Two Quantitative Techniques and an Alternative Method of Expressing Serum-Dilution Titer. Christine E. Rice.—p. 95.

Journal of Investigative Dermatology, Baltimore

16:1-396 (May) 1948

- Pyribenzamine in Therapy and Prophylaxis of Rhus Dermatitis. D. C. Tweedall and W. B. O'Connor.—p. 301.
- *Calciferol Treatment of Leprosy. H. T. Chaglassian.—p. 303.
- Specificity of Streptococci Isolated from Patients with Skin Diseases: Studies on Pemphigus, Dermatitis Herpetiformis, Lupus Erythematosus and Erythema Multiforme: III. Lupus Erythematosus Disseminatus. A. L. Welsh.—p. 305.
- Dissociation in *Candida Albicans*. B. S. George and O. A. Plunkett.—p. 327.
- Physiology and Pathology of Cornification. E. Meirowsky and G. Behr.—p. 343.
- Gamma Isomer of Hexachlorocyclohexane in Treatment of Scabies. W. E. Wooldridge.—p. 363.
- Mechanism of Adhesive Plaster Irritation. S. M. Peck, H. Rosenfeld and A. Glick.—p. 367.
- Kveim Test in Sarcoidosis: Theory, Meaning and Practical Value of Skin Tests and Reactions in Sarcoidosis. M. Leider.—p. 377.
- Aromatic Amines and Azo-Dyes in Allergy and Cancer. R. L. Mayer.—p. 389.

Calciferol in Leprosy.—The favorable results obtained with calciferol in tuberculosis of the skin induced Chaglassian of the American University of Beirut to try it in 2 cases of tuberculoid leprosy. Considerable improvement was obtained in these 2 patients. The author intends to continue the use of calciferol in a larger group of patients with leprosy.

Journal of Nat. Cancer Inst., Washington, D. C.

8:161-200 (Feb.) 1948

- Effect of Added Phosphate on Glutamine Desamidation in Tumors. J. P. Greenstein and Florence M. Leuthardt.—p. 161.
- Effect of Injection of Various Substances Upon In Vivo Electrical Resistance of Rats. H. Kahler.—p. 163.
- Dehydropeptidase Activity of Normal and Pathologic Human Serums. A. Meister and J. P. Greenstein.—p. 169.
- Heterologous and Homologous Growth of Transplants During Course of Development of Spontaneous Mammary Tumors in C3H Mice. H. C. Browning.—p. 173.
- Comparative Susceptibility of the Lymphoid Tissues of Strain C57 Black Mice to Induction of Lymphoid Tumors by Irradiation. H. S. Kaplan. p. 191.

Journal of Neurosurgery, Springfield, Ill.

5:213-326 (May) 1948. Partial Index

- Torkildsen Procedure: Report of 19 Cases. E. F. Fincher, G. J. Stewler and H. S. Swanson.—p. 213.
- Experiments on Bridging of Gaps in Severed Peripheral Nerves of Monkeys. D. D. Matson, E. Alexander Jr. and P. Weiss.—p. 230.
- Should Excision Be Attempted in Cases of Neoplasm in or near Third Ventricle of Brain. Experiences with Palliative Method. A. Torkildsen.—p. 249.
- Technic of Anterolateral Cordotomy. E. A. Kahn and M. M. Peet.—p. 276.
- Suture of Facial Nerve After Injury at Base of Skull: Method of Gaining Exposure and Slack by Resection of Parotid Gland. J. C. White.—p. 284.
- Unilateral Prefrontal Lobotomy with Relief of Ipsilateral, Contralateral, and Bilateral Pain: Preliminary Report. J. E. Scarff.—p. 288.

Journal of Nutrition, Philadelphia

35:523-619 (May) 1948. Partial Index

- Relation of Diet Composition and Vitamin C to Vitamin A Deficiency. J. Mayer and W. A. Krehl.—p. 523.
- Effect of Isocaloric Substitution of Alcohol for Dietary Carbohydrate Upon Excretion of B Vitamins in Man. R. E. Butler and H. P. Sarett.—p. 539.
- *Growth and Reproduction of Rats Fed Army Combat Rations. E. M. Sporn and C. A. Elvehjem.—p. 549.
- *Studies with Monkeys Fed Army Combat Rations. E. M. Sporn, W. R. Rueggamer and C. A. Elvehjem.—p. 559.
- *Effect of Protein Intake on Bones of Mature Rats. H. R. Estremera and W. D. Armstrong.—p. 611.

Rats Fed Army Combat Rations.—Sporn and Elvehjem fed the army combat rations K, C and 10 in 1 to young growing rats. Growth and reproduction over extended periods of time were the two criteria used in these experiments for evaluating the rations. Actually these rations were consumed for the most part by mature men in the field during relatively short intervals of time. When the K, C and 10 in 1 rations were fed to female rats, it was found that the survival rate of the young born to the females was low. The addition of liver to the K ration improved the percentage of survival of young born to females on this diet. The growth of male rats on these diets was suboptimum. The addition of the B vitamins and casein to the rations substantially improved growth in all cases. Normal growth was obtained when K and C rations were supplemented with casein and vitamins.

Monkeys and Army Combat Rations.—Sporn and his associates fed the army combat rations K, C and 10 in 1 ad libitum to young growing monkeys. Growth and hemopoiesis covering an extended period of time were the two criteria used in evaluating the several rations. The results of the experiments indicate that none of the combat rations tested could support growth in monkeys. The C ration could be substantially improved by the addition of a mixture of the water-soluble vitamins. The 10 in 1 ration produced normal growth in monkeys when supplemented with the vitamins plus raw whole milk. The K ration required the same supplements in order to support normal growth. The supplemented C and K rations could support a normal hemoglobin concentration. Normal growing monkeys on the supplemented K and 10 in 1 ration had suboptimum hemoglobin levels. For the growing monkey, K ration seems deficient in pyridoxine and folic acid, and possibly choline as well.

Protein Intake and Composition of Bone.—Estremera and Armstrong determined the effects on body weight and on the humeri produced by feeding to mature rats for thirty days equal amounts of essentially isocaloric diets containing 4.5, 9.0, 13.5 and 18.0 per cent protein as lactalbumin. It was found that a diet containing 4.5 per cent protein will not support

body weight of mature rats while diets containing 9.0, 13.5 and 18.0 per cent protein permit an increase in body weight in approximate proportion to the protein content. A diet containing 13.5 per cent protein supports a degree of skeletal constitution in mature rats equal to that of a diet containing 18.0 per cent protein. Diets containing 9.0 and 4.5 per cent protein are inadequate to support normal skeletal constitution in mature rats. Diets containing 9.0 and 4.5 per cent protein interfere with the growth in length of the humeri of rats which are near the end of the period of skeletal growth.

Journal of Pharmacology & Exper. Therap., Baltimore 93:1-126 (May) 1948. Partial Index

- Effects of Intravenous Injection of Tetra-Ethylammonium Chloride on Intra-Arterial Blood Pressure and Other Physiologic Variables in Man. G. E. Brown Jr., E. H. Wood and E. H. Lambert. p. 10.
- Effect of Polophyllin on Transplanted Mouse Tumors. M. Belkin. —p. 18.
- Blocking Action of Magnesium Ion on Sympathetic Ganglia. J. B. Stanbury.—p. 52.
- Comparative Study of Intravenous Pigeon and Intravenous Cat Method in Assay of Digitalis. H. A. Braun and L. M. Lusky.—p. 81.
- Relative Experimental Coronary Vasodilator Potencies and Toxicities of Papaverine, Theophylline, and A Papaverine-Theophylline Molecular Association Compound. C. V. Winder and Margaret E. Kaiser. —p. 86.
- Pharmacologic Properties of Sympathomimetic Diamines. G. Lehmann and L. O. Randall.—p. 114.

Journal of Urology, Baltimore 59:773-980 (May) 1948. Partial Index

- Renal Rickets and Polycystic Disease of Kidney. H. L. Kretschmer. —p. 773.
- Massive Hydronephrosis. H. A. Hoffman.—p. 784
- Renal Tuberculosis: Does It Heal Clinically? J. C. McClelland, K. H. Davis and E. Massig.—p. 795.
- Persistent Arterial Hypertension. C. R. O'Crowley and H. S. Martland. —p. 799.
- Hemangioma of Kidney. E. F. Turkel.—p. 802.
- Management of Renal Trauma. J. C. Kimbrough and J. N. Furst —p. 807.
- Late Complications of Lumbar Wound Healing (Neuritis and Herniation); Diagnosis and Treatment. C. P. Mathé.—p. 816.
- *Studies in Dissolution of Urinary Calculi: Experimental and Clinical Aspects. L. D. Keyser, P. C. Scherer and L. W. Claffey.—p. 826.
- Management and Prevention of Renal and Ureteral Calculi. H. K. Sangree.—p. 842.
- Intubated Ureterotomy: Experimental Work and Clinical Results. D. M. Davis, G. H. Strong and W. M. Drake.—p. 851.
- Vesical Abnormalities Incident to Diabetes Mellitus. R. Lich Jr. and O. Grant.—p. 863.
- Epithelial Bladder Tumors Attacked by Radons and Fulguration During Years 1926-1938. E. L. Keyes.—p. 875.
- Cutaneous Metastasis from Carcinoma of Urinary Bladder: Report of 2 Cases. C. C. Higgins and K. F. Hausfeld.—p. 879.
- Use of Oxyel in Prostatic Resections. W. E. Hatch.—p. 887.
- Prolonged Morbidity Following Operation for Benign Prostatic Hyperplasia: Statistical Survey. C. H. deT. Shivers and C. E. Groom.—p. 893.
- *Use of Continuous Gastric Lavage in Treatment of Uremia Associated with Prostatism. V. Vermooten and D. M. Hare.—p. 907.
- Prevention of Fatal Pulmonary Emboli After Prostatectomy. F. H. Colby.—p. 920.
- Value of Combined Blood Phosphatase and Sedimentation Rate Determinations in Diagnosis of Metastasis in Prostatic Carcinoma. R. N. Boylan and J. H. Tillisch.—p. 931.

Dissolution of Urinary Calculi.—Keyser and his co-workers attempted to attack the organic matrix of 150 urinary calculi in vitro by treating them with ferments preliminary to irrigation with solvent solutions such as G solution (monohydrate citric acid, anhydrous magnesium oxide and anhydrous sodium carbonate in distilled water). Of the enzymes studied, 0.5 per cent urease is the most effective, with orthozyme, ficin proteinase and trypsin showing a comparable but lesser degree of activity. These enzymes act by a digestant action on the organic matrix (colloids) of the stone. This is partly dissolved and partly swollen so that the cementing substance which binds the crystalline matter together is loosened and renders the latter more susceptible to dissolution by crystalline solvents. Positive evidence is presented that such enzyme treatment in vitro accelerates and intensifies the action of G solution, especially on alkaline calculi. This treatment was given a clinical trial in 18 cases of urinary calculi and alkaline-encrusted cystitis. Irrigation was provided through three ureteral catheters, one inflow and two outflow catheters, which have been passed to the pelvis of the stone-containing kidney. The inflow catheter is connected to a Y tube which is attached to two containers.

a larger containing G solution and a smaller flask with the ferment solution. A Foley retention catheter conducts drainage from the bladder. There is presumptive evidence that the enzyme effect may likewise accelerate and intensify the effect of G solution and similar solvents in the dissolution of stones and calcareous material in the human being. In the problem of calculus dissolution the organic framework of stone is as important an object of attack as the crystalline matter.

Continuous Gastric Lavage in Treatment of Uremia.—Vermooten and Hare treated 7 patients between the ages of 55 and 86 years who had uremia associated with prostatism by continuous gastric lavage. When it was possible to introduce two nasal tubes into the patient's stomach, fluid was allowed to drip continuously into one tube while being automatically aspirated through the other. In the others ½ to 1 ounce of fluid was injected into the stomach through a Levine tube, which was then again immediately connected to a continuous suction apparatus. Fluid was injected into the stomach every ten minutes day and night. Continuous irrigation with about 10,000 cc. of fluid per twenty-four hours (about 150 drops per minute) yielded optimum results. Severe uremia was corrected within twenty-four hours after beginning continuous gastric lavage. The blood urea level dropped within the first seven hours and continued to drop so rapidly that the patients regained consciousness and were clinically well within forty-eight to seventy-two hours after the initiation of the treatment. The effect of continuous gastric lavage on 3 female patients between the ages of 23 and 28 years who had chronic nephritis with hypertension and uremia is also reported. Although as much as 1 Gm. or more of urea was removed in twenty-four hours by continuous gastric lavage, the azotemia in these cases persisted and became worse.

New England Journal of Medicine, Boston 238:615-648 (April 29) 1948

- Evaluation of Curare in Spasticity Due to Spinal-Cord Injuries. R. A. Kuhn, and D. S. Bickers.—p. 615.
- Recklinghausen's Neurofibromatosis Associated with Intrathoracic Meningocele. Report of a Case. C. S. Welch, Alice Ettinger and P. L. Hecht.—p. 622.
- Eosinophilic Granuloma: Report of Case with X-Ray Evidence of Rapid Progression. W. J. Baker, J. D. Houghton, E. Wissing and R. H. Betts.—p. 626.
- Severe Reaction to Tetraethylammonium Chloride. A. L. Friedrich Jr., W. P. Chapman and J. B. Stanbury.—p. 629.
- Technical Advances in Physical Medicine. A. L. Watkins.—p. 631.
- Retropertitoneal Ganglioneuroma.—p. 634.
- Massive Aspiration of Amniotic Fluid. Thrombosis of Superior Longitudinal Sinus.—p. 637.

238:649-678 (May 6) 1948

- Repair of Hiatus Hernia of Diaphragm by Supradiaphragmatic Approach: Technic and Results. R. H. Sweet.—p. 649.
- Prolonged Paroxysmal Atrial Tachycardia: Report of Case Including Treatment with Veratrum Viride. E. W. Shaw.—p. 654.
- *Food Sensitivity in 100 Asthmatic Children. L. W. Hill.—p. 657.
- *Generalized Exfoliative Dermatitis Due to Penicillin. J. O. Shaffer.—p. 660.
- Regional Anesthesia. J. M. Dondanville and M. J. Nicholson.—p. 661.
- Pulmonary Fibrosis and Emphysema, with Slight Bronchiectasis. Cor Pulmonale.—p. 667.
- Metastatic Adenocarcinoma, Primary Site Undiscovered.—p. 671.

Food Sensitivity in 100 Asthmatic Children.—Hill studied 100 asthmatic patients and tested them by the scratch method. There were positive reactions in 218 scratch tests, but in only 44 or about a fifth was it definitely proved that the food could cause asthma. No symptoms were caused by 158 foods (72 per cent) to which tests showed cutaneous sensitivity. It is probably true that asthma would have been produced in some of these patients had a considerable amount of the food been ingested. Not uncommonly the degree of sensitivity to some of these foods, such as fish and nuts, is so high that as soon as any of the food touches the lips or enters the mouth the mucous membrane begins to swell and the food is immediately spat out or regurgitated before there has been any chance for it to be absorbed. If these cases are included, the number of foods producing asthma is increased from 44 to 60. About a fifth of positive reactions to scratch tests with foods in asthmatic children are of etiologic significance. The mother usually knows what food produces asthma, and has omitted it before cutaneous tests are done. Theoretically, any food can

cause asthma; practically, not many foods commonly do so. Fish, egg, walnuts, peanuts and chocolate are the most important. Wheat and milk can cause asthma in children, but do not often do so. Sensitivity to food, which should always be taken into consideration in asthmatic children, is of relatively little importance in comparison with sensitivity to pollen, other environmental allergens and infections of the upper respiratory tract.

Generalized Exfoliative Dermatitis Due to Penicillin.—Shaffer reports the case of a man, aged 27, in whom penicillin was employed in typical impetigo contagiosa of the skin. Generalized exfoliative dermatitis developed. Generalized exfoliative dermatitis is a complication to be feared and should not be risked by the local application of penicillin ointment to an innocuous skin lesion. In the case reported continuation of intramuscular penicillin after the occurrence of the generalized rash might have caused a fatality. The occurrence of localized exfoliative dermatitis in other cases has illustrated the dangers of local penicillin. Penicillin ointment is contraindicated in the treatment of cutaneous lesions not only because of the reactions dangerous to life that may occur during the treatment of an innocuous condition but also because systemic sensitization may prevent later parenteral use of penicillin when it is needed to combat a severe systemic infection.

Ohio State Medical Journal, Columbus

44:329-432 (April) 1948

- Differential Diagnosis and Treatment of Diarrheas. Z. T. Bereovitz.—p. 361.
Reversible Heart Disease. H. Warsbawsky and D. E. Nolan.—p. 369.
Chemotherapy in Infants and Children: III. Streptomycin. J. G. Kramer.—p. 375.
Varicose Veins. W. W. Weiss.—p. 378.

Philippine Medical Association Journal, Manila

24:109-154 (March) 1948

- Surgical Diseases of Thyroid. J. Estrada, P. T. Nery and L. B. De Vera.—p. 109.
Postpartum Eclampsia Supervening Later than Three Days After Delivery. H. Acosta-Sison.—p. 115.
Penicillin in Acute Mastoiditis with Report of 3 Cases. C. V. Yambao and F. Bongco.—p. 119.
Conservative Treatment of Early Intestinal Intussusception: Report of 5 Cases. G. A. De Venecia.—p. 123.
Efficacy of Our Local Anti-Rabies Vaccine. R. N. Relova.—p. 129.

Texas State Journal of Medicine, Ft. Worth

43:743-804 (April) 1948

- Management of Oral Infection in Relation to Somatic Disease. J. J. Addison.—p. 747.
Radiology as it Relates to Obstetrics. R. D. Moreton.—p. 753.
Roentgenologic Methods in Obstetrics. M. Schneider.—p. 758.
Roentgen Pelvimetry. E. G. Reuter.—p. 762.
Gynecologic Investigation of Patients in State Eleemosynary Institutions. W. R. Cooke and J. D. Weaver.—p. 765.
Analysis of Maternal Mortality at St. Joseph's Infirmary, Houston. J. L. Spezia.—p. 767.
Diagnosis of Acute Primary Atypical Pneumonia, Etiology Unknown, in Children. D. Greer.—p. 771.
*Acute Laryngotracheobronchitis. M. W. Everhart.—p. 776.
Cooperation of Private Physician in School Health Work. I. P. Barrett.—p. 778.
The Left Dominant Child. E. T. Bytton.—p. 782.

Acute Laryngotracheobronchitis.—According to Everhart acute laryngotracheobronchitis is predominantly a disease of infancy and early childhood. The author and others saw numerous cases of this type in a town in Texas during the winter of 1946 to 1947. About two thirds of the 67 patients treated by the author and another physician were cared for in their homes; the others were hospitalized. Throat cultures were taken and Schick tests were done on patients not recently immunized against diphtheria. None of the cases with laryngeal and obstructive symptoms reviewed here proved to be diphtheritic in origin. Sulfadiazine was given to each patient, and some received from 150,000 to 300,000 units of penicillin in oil and wax. Chemotherapy and rest in a warm, moist atmosphere play an important part not only in reducing the number requiring tracheotomy, but also in shortening the postoperative period. Tracheotomy, to be effective, must be done before the patient becomes exhausted. Four of the patients reviewed here required tracheotomy, and all recovered.

Western J. Surg., Obst. & Gynecology, Portland, Ore. 56:253-316 (May) 1948

- Proteolytic Activity in Physiology, Pathology and Therapeutics of Thyroid Gland. E. DeRobertis.—p. 253.
Further Observations on Thiouracil and Related Substances in Treatment of Toxic Goiter. W. O. Thompson, Phebe K. Thompson and Dorothy M. Mandernach.—p. 270.
Sodium Pentothal Anesthesia in Obstetrics. C. L. Cooley and H. F. Schwartz.—p. 278.
*Immediate Attention to Postpartum Cervix. D. G. Tollefson.—p. 283.
Study of Ten Years of Cesarean Sections at Emanuel Hospital. C. L. Pearl.—p. 290.
Recent Advances in Surgery of Newborn and of Early Infancy. F. W. Rutherford.—p. 298.
Electron Microscope Studies of Normal Human Spermatozoa. J. H. Sanders.—p. 306.
Infertility and Stability of Marriage. P. Popenoe.—p. 309.

Immediate Attention to Postpartum Cervix.—Tollefson says that since 1936 it has been the practice at his hospital to inspect all cervixes after the completion of the third stage. All lacerations of 1 cm. or more were repaired if there were no contraindications. Subsequent examination proved that immediate care of these cervixes established the normal contour of the structure with a complete covering of squamous epithelium and no evidence of eversion or erosion. The edges were trimmed and sutures were placed about 0.75 cm. apart, including the entire musculature down to the mucosa. Of 1,269 women delivered, 380 of whom were primiparas, 672 underwent cervical repairs. Excellent, good or fair results were obtained in all but about 4 per cent. This figure compares favorably with over 36 per cent of poor results in the 597 women who did not undergo repair. All cervixes should be inspected after delivery of the placenta and all injuries greater than 1 cm. should be repaired. When there is considerable thinning of the angles with minimal laceration, the edges should be trimmed and sutured in order to reestablish the normal contour of the cervix and prevent eversion, erosion and cervicitis. Repair of the cervix should not be attempted when there is decided relaxation of the uterus, when there has been a recent infection and when prolongation of the anesthetic would be dangerous. Immediate care of the cervix has an important place in the prophylaxis of cancer of the cervix.

Wisconsin Medical Journal, Madison

47:363-444 (April) 1948

- Psychiatry and General Physician. D. W. Hastings.—p. 379.
Histamine in Certain Types of Headache. S. Salinger.—p. 382.
Ringworm of Scalp. D. M. Ruch.—p. 385.
Research Project on Appendicitis in Rock County. T. J. Snodgrass, W. A. Munn and T. Flarity.—p. 388.
Therapy in Acute Infectious Disease in Children. J. P. Conway.—p. 393.

47:449-552 (May) 1948

- Therapy in Epilepsy. H. H. Merritt.—p. 463.
Cycloidalysis and Iridectomy for Glaucoma with Cataract. L. A. Copps.—p. 469.
Management of Acute Cholecystitis. R. M. Zollinger.—p. 472.
*Anesthesia and Liver Function. F. J. Pohle.—p. 476.
Treatment of Carcinoma of Cervix. R. S. Cron.—p. 480.

Anesthesia and Hepatic Function.—Pohle made a number of tests of hepatic function before and at intervals after operation in 154 patients. The patients were anesthetized with one of six agents as follows: chloroform, ether, cyclopropane, dibucaine hydrochloride (spinal), "pentothal sodium" or tribromoethanol. The duration of anesthesia was long and the operative procedures extensive. The majority of the patients were not well nourished. Impairment of hepatic function was detected after operation in about 50 per cent of the cases irrespective of which of the six anesthetics had been administered. The alterations in function were transitory and were rarely suspected clinically. Many factors besides the anesthetic agent contribute to the decrease in hepatic function frequently observed postoperatively. The importance of the nutritional state and the avoidance of oxygen lack are emphasized. The present observations suggest that the deleterious effects of chloroform on the liver have been overemphasized in the past. However, the adverse cardiac effects which frequently occur do not warrant a general revival of the use of this agent in clinical practice.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine, Liverpool

41:7-40 (April) 1948. Partial Index

- Effect of High Temperature on Pupal Stage of *Glossina* in Relation to Transmission-Rate of Trypanosomes. T. A. M. Nash.—p. 30.
Observations on Use of Cerearial Antigen in Diagnosis of Schistosomiasis. D. M. Blair and W. F. Ross.—p. 46.
Leishman's Stain Adapted for Use with Histologic Sections. R. H. Black.—p. 52.
Simple Technic for Micro-copy of Living Tissues in Situ, with Observations on Splenic Circulation. D. Gall.—p. 54.
Cultivation of Exoerythrocytic Forms of *Plasmodium Gallinaceum*: I. Preliminary Note. G. Gramiccia and R. H. Black.—p. 88.
Resorption of Hemoglobin by Renal Tubules in Hemoglobinuria. R. H. Black.—p. 90.
*Pathogenesis of Liver Lesion Due to Administration of Carbon Tetrachloride. W. H. H. Andrews and R. G. Macgregair.—p. 95.
Infection of Reticuloocytes by *Plasmodium falciparum* and *Plasmodium Malariae* in Hyperendemic Indigenous Malaria. L. J. Chwatt.—p. 101.
Occurrence of *Piroplasma*, *Eutoploporus* Macaei, in East African Monkeys. C. M. Wenyon.—p. 118.

Hepatic Lesion Due to Carbon Tetrachloride.—Andrews and Macgregair say that in the course of experiments designed to elucidate the pathogenesis of centrilobular changes in malaria, the effect on the liver of administering carbon tetrachloride, chloroform and phenylhydrazine was investigated. Both carbon tetrachloride and chloroform, if given in sufficient dosage, lead to centrilobular necrosis and degeneration. The authors provide evidence that the lesion is due, at least in part, to anoxia of the central region of the liver lobules, secondary to obstruction of the blood flow through the sinusoids. This obstruction arises from swelling of the parenchymal cells, which leads to a diminished vascular bed within the liver. The majority of the experiments were made on albino rats. The authors describe a method of outlining the hepatic sinusoids with india ink.

British Medical Journal, London

1:719-770 (April 17) 1948

- *Chemotherapy of Cholera with New Sulfonamide Compound, ("6257"). S. S. Bhatnagar, J. de Sa, F. Fernandes and P. V. Divekar.—p. 719.
Treatment of Ringworm of Scalp. R. T. Brain, K. Crow, H. Haber and others.—p. 723.
Prevention of Ringworm in Tropics. H. R. Jolly.—p. 726.
Effects of Sex and Thyroid Hormones on Process of Ageing in Female Rats. V. Korotchevsky.—p. 728.
Serum Iron in Normal Women. S. Dahl.—p. 731.
Refractory Iron Deficiency Anemia Treated with Intravenous Saccharated Oxide of Iron. L. S. P. Davidson and R. H. Girdwood.—p. 733.

New Sulfonamide Drug in Chemotherapy of Cholera.

—According to Bhatnagar and his associates of Bombay the new compound "6257," which is a condensation product of sulfathiazole and formaldehyde, shows great bactericidal and growth-inhibiting action against *Vibrio cholerae* in in vitro tests. When administered parenterally to mice it gives 100 per cent protection against septicemia resulting from intraperitoneal cholera infection. It is not so successful when given by mouth. This is due to deficient blood concentration of the drug. In the course of an epidemic in an endemic area, patients were treated in their homes with this drug. In the absence of any adjuvant treatment, the survival rate compared favorably with that obtained by the usual therapeutic methods. Although patients have usually recovered at the end of seventy-two hours, a schedule of treatment extending over seven days is advised because of the persistence of cholera vibrios in the stools. In the present series the excreta were free from vibrios on the sixth day. The two outstanding properties of "6257" that are in sharp contrast to those of other sulfonamide derivatives are the absence of toxicity within the zone of therapeutic action, its slow absorption from a subcutaneous "depot" and equally slow excretion from the system, so that blood concentration can be maintained at a higher level for a longer period of time. If future experience shows that the therapeutic value of "6257" and that of other similarly prepared compounds possessing these two qualities extends over a wider field of pathogenetically important bacterial species, it might be that the sulfonamide derivatives would regain their place of priority in clinical therapy. This would be a welcome reversion from the point of view of production as well as economy.

Lancet, London

1:581-620 (April 17) 1948

- Carcinoma of Stomach. H. Taylor.—p. 581.
*Streptomycin Treatment of Tuberculous Meningitis; Streptomycin in Tuberculosis Trials Committee Medical Research Council. G. Marshall and others.—p. 582.
Blood-Sugar Levels in Slow Starvation. M. L. Chakrabarty.—p. 596.
*Intensified Electrical Convulsion Therapy in Treatment of Mental Disorders. L. G. M. Page and R. J. Russell.—p. 597.
Local Fascial Repair of Femoral Hernia. D. F. E. Nash.—p. 598.

Streptomycin in Tuberculous Meningitis.—Marshall and his associates say that in September 1946 the Medical Research Council appointed a committee to direct clinical trials of streptomycin in the treatment of tuberculosis. This report is concerned with the results in tuberculous meningitis. The centers kept uniform records and followed general recommendations regarding dosage. The general results reported here refer to a total of 105 proved cases. All the cases were proved by culture, by guinea pig inoculation or by postmortem examination. A more detailed analysis is concerned with 92 of the cases. Of the 105 patients 67 have died, and of the 92 patients 61 have died. Of the 33 children under 3 years, 27 died; of the 72 older children and adults, 40 died. Of the patients admitted at an early stage of the disease, 42 per cent were making good progress, compared with 26 per cent of those at a medium stage and 7 per cent of those at an advanced stage on admission. This indicates the great importance of early diagnosis. Of the patients who received streptomycin only intramuscularly, 11 per cent made good progress, compared with 35 per cent of those receiving streptomycin by both intramuscular and intrathecal routes. In patients who ultimately fared badly, tubercle bacilli were isolated from the cerebrospinal fluid much more frequently during the first three weeks than in patients who made good progress. Strains isolated from 22 patients between the twenty-ninth and the one hundred and thirty-sixth day of treatment were tested for sensitivity; only 3 of these were resistant to streptomycin.

Intensified Electrical Convulsion Therapy.—Page and Russell studied the effect of increased voltage and duration. The voltage was gradually increased from the minimum of 100 volts necessary to produce a major convulsion to a fixed standard of 150 volts. The duration was similarly increased from 0.3 second to a standard of 1 second. The effect of repeated electrical shocks administered during the convulsive phase was investigated. Ultimately a standard of 150 volts for 1 second followed by five shocks during the primary convulsion was reached, since it was noted that, once a major convulsion had been induced, no increase in intensity of the convulsion resulted from the extra shocks. Treatment is given daily and never less than two hours after a meal. The few patients who show apprehension or are known to be restless after treatment are given sedation. Daily treatment is stopped as soon as there is a remission or pronounced confusion. It is seldom necessary to reach confusion, because a remission usually takes place after the first few treatments. Amnesia resulting from the treatment can be ignored, and the course continued. Memory always returns within a few days. The risk of fracture seems to be less with the new technic than with the old. More than 300 patients have received treatment by the new technic and more than 1,500 individual treatments have been given without fracture or dislocation.

Transactions Royal Soc. Trop. Med. and Hyg., London

41:575-686 (March) 1948. Partial Index

- Comparative Merits of Spleen, Spleen and Liver Punctures in Study of Human Visceral Leishmaniasis. E. A. Ho, Tsung-Hsin Soong and Yung Li.—p. 629.
Protein Content of Cerebrospinal Fluid in Trypanosomiasis. K. R. Hill.—p. 641.
Surgical Treatment of Large Elephantoid Scrotum. A. C. Lovett-Campbell.—p. 645.
Plague Controlled in Haifa by Use of DDT Alone. J. S. McKenzie Pollock.—p. 647.
Results of Investigation of Therapeutic Action of Paludrine and Pamaquin on Acute Attacks of Benign Tertian Malaria. J. F. Monk.—p. 657.
Quinine By Continuous Intravenous Drip in Treatment of Acute Falciparum Malaria. J. H. Strahan.—p. 669.
Failure of Neo-Arsphenamine in Relapsing Vivax Malaria. J. W. Field, R. Stewart Johnston and H. Smith.—p. 677.

Acta Medica Scandinavica, Stockholm**130:213-316 (April 24) 1948. Partial Index**

Inhibitory Effect of Oxygen Pressure in Blood on Respiration Through Intermediacy of Chemo-Receptors. P. A. A. Weterings.—p. 232.
Kidney Complications During Sulfonamide Therapy. A. H. Andersen and J. Andersen.—p. 259.

Relation of Glycosuria in Pregnancy to Chronic Pancreatitis. J. W. Grott.—p. 283.

*Primary Atypical Pneumonia: Report of 112 Cases with Positive Cold Agglutination Reaction. G. Laurell.—p. 299.

Primary Atypical Pneumonia.—Laurell reviews observations on patients with suspected primary atypical pneumonia whose blood samples were examined for cold agglutinins. The reaction was positive in 112 cases and only these cases were included in the present investigation. This does not mean, however, that clinically typical cases in which the reaction was negative could not have been primary atypical pneumonia. The reaction to the cold agglutination test was considered positive when, from having been negative in serum taken during the acute phase of the disease, it was positive in the convalescent stage with a titer of at least $\frac{1}{8}$ to $\frac{1}{16}$. The same was the case if the titer increased during the course of the disease from $\frac{1}{4}$ to $\frac{1}{16}$. A single titer value of $\frac{1}{16}$ when obtained during the convalescent phase was also regarded as positive. The author reviews clinical, laboratory and roentgenologic observations and describes 2 typical cases. The cases of primary atypical pneumonia observed in Sweden show essentially the same features as those described by Anglo-American investigators. Contrary to the observations made by American investigators, even cold agglutination as low as $\frac{1}{16}$ had diagnostic value. Treatment with sulfonamide compounds and penicillin does not seem to have had a noticeable effect on the course of the disease.

American Review of Soviet Medicine, New York**5:97-128 (April) 1948**

Virus Etiology of Malignant Tumors. N. N. Petrov.—p. 97.
Early Treatment of Esophageal Burns in Children. P. M. Rassudov.—p. 101.

Polypi of the Esophagus. M. S. Mikhelovich.—p. 105.

*Treatment of Acute Nephritis. Y. Y. Shpirt.—p. 107.

Living and Dead Cells Under Ultraviolet Microscope. L. P. Larionov and E. M. Brumberg.—p. 111.

Treatment of Acute Nephritis.—According to Shpirt acute nephritis may be divided into three stages. In the initial phase of less than two weeks' duration, the predominant factor is arteriolar and capillary hypertension that causes cardiovascular deficiency and glomerular involvement. In the second stage, lasting from two to twelve weeks, inflammation of the glomeruli with other changes is predominant. Hypertension is still present, but heart failure and edema are often not in evidence. In the third stage there is advanced involvement of the glomerular apparatus. The reappearance of arteriolar hypertension at this stage should be considered as secondary to the inflammation in the kidneys. To reduce the hypertension of the arteriolo-capillary system that was caused by a disturbed neuroregulatory mechanism, the authors used one bilateral paranephric block. Fifty cubic centimeters of a 1 per cent solution of magnesium sulfate was injected on each side. Seventeen of 20 patients with stage 1 nephritis responded to paranephric block. All clinical signs of the disease disappeared in ten days. In the second stage of the disease, block reduced the high blood pressure and edema in ten days, but the urine did not return to normal. In the third stage of acute nephritis, block was not effective, sometimes causing increase of albuminuria and hematuria. In nephrosis, as well as in nutritional edema, block aggravated the condition.

Anais Brasileiros de Ginecologia, Rio de Janeiro**13:87-172 (Feb.) 1948. Partial Index**

*New Method for Quantitative Determination of Chorionic Hormone. N. de Castro Barbosa.—p. 115.

Method for Determination of Chorionic Hormone.—De Castro Barbosa found that in the Galli-Mainini test for pregnancy, liberation of spermatozoa from the toad's testicle and their elimination in the toad's urine take place only when the hormone in the injected urine is in a certain concentration. The minimal concentration capable of stimulating liberation of

spermatozoa constitutes the toad's chorionic unit (Bufo unit), which is equivalent to 10 international chorionic units. Liberation of spermatozoa occurs as soon as the hormone reaches the testicle. Spermatozoa appear in toad's urine forty to fifty minutes after the injection and not before, regardless of the concentration of hormone in the injected urine. The greater the concentration of hormone in the injected urine, the greater the number of spermatozoa in the urine. The Galli-Mainini test for pregnancy can be used for quantitative determination of chorionic hormone in urine or in the pharmacologic assay for chorionic hormone in drugs.

Archivos Inst. de Cardiología, Mexico, D. F.**18:177-332 (April 30) 1948. Partial Index**

*Analysis of 100 Consecutive Cases of Acute Myocardial Infarct: Preliminary Report with Discussion of Use of Anticoagulants. S. Zajarías and L. Méndez.—p. 278.

Acute Myocardial Infarct.—Zajarías and Méndez analyzed 100 consecutive cases of acute myocardial infarction observed at the National Institute of Cardiology of Mexico. The anticoagulant treatment was not administered to patients in this group. Mortality and morbidity of this group were lower than those reported by Nay and Barnes in a group of 100 patients who did not have anticoagulant treatment, and lower than those observed by Parker and Barker in 50 patients who were given anticoagulant treatment. The authors feel that anticoagulant treatment should be resorted to only in cases showing a certain degree of thrombophilia.

Nordisk Medicin, Stockholm**37:349-396 (Feb. 20) 1948. Partial Index**

Pathogenesis and Therapy of Thyrotoxicosis. H. Wijnbladh.—p. 351.

*Continuous Methylthiouracil Treatment in Thyrotoxicosis. Results After Termination of Treatment. K. Kjerulf-Jensen and E. Meulengracht.—p. 358.

*Continuous Methylthiouracil Treatment in Hyperthyreosis. A. R. Frisk.—p. 363.

Roentgen-Iodine Treatment in Basedow's Disease (Thyrotoxicosis). H. Rasmussen.—p. 367.

Diagnostic Tolerance Test with Radioactive Iodine in Hyperthyreosis. B. Skanse.—p. 372.

*Diseases Associated with Thyrotoxicosis. O. Selvaag.—p. 375.
Osteoporosis with Collapse of Spinal Column After Prolonged Administration of Thyroid Hormone. E. D. Bartels.—p. 382.

Prolonged Treatment with Methylthiouracil in Thyrotoxicosis.—The treatment was started in Bispebjerg Hospital and was continued in ambulant patients under control. Kjerulf-Jensen and Meulengracht state that the 170 patients on transfer to ambulant treatment were as a rule able to work at once or soon, except in cases in which age or other than thyrotoxic disorder interfered. The duration of the treatment varied from five to thirty-seven months. On a follow-up 38 patients were still under treatment, 20 had completed the treatment less than three months previously; 101 patients were observed from three to thirty-four months after the treatment, an average of seventeen months. All thyrotoxic symptoms had disappeared or regressed. In most cases there was a gradual decrease in the size of the goiter after the treatment, and in some cases complete disappearance. Adenomatous goiter present before the thyrotoxicosis is the most likely to persist, but has been known to decrease in size after treatment. In 10 cases there was a recurrence after a symptom-free period of nine to thirty months. Later recurrences may be expected. Recurrence calls for another treatment with methylthiouracil.

Prolonged Treatment with Methylthiouracil in Hyperthyreosis.—Frisk says that since 1944 in 160 cases hyperthyreosis has been treated with methylthiouracil, in some cases with similar substances. Thyroidectomy was done in 14 cases, and for various reasons the treatment was discontinued in another 12 cases. In 73 of the remaining cases the treatment was completed in three to thirty-six months. In 20 cases recurrence led to repeated treatment, now ended in 8 cases. Sixty-one patients, 32 observed for over a year and 23 for over a year and a half, continue to be without symptoms after withdrawal of the drug. Previously untreated patients with enlargement of the thyroid and patients on whom thyroidectomy has been done respond most rapidly to the treatment and have the best chance of permanent remission. Hyperthyreosis with considerable disturbance of the thyroid, toxic adenoma and intrathoracic goiter

should be treated operatively. Treatment with thiouracil derivatives for two weeks is advised; the reaction of the patient and his cooperation can be observed during this time and the decision as to treatment made.

Diseases Associated with Thyrotoxicosis.—Hypertension was present in 51 of Selvaag's 392 cases of thyrotoxicosis; coronary thrombosis in 2; valvular heart defect in 7; simple anemia in 96; disorders of the respiratory organs in 11, of the digestive tract in 25, of the urogenital tract in 21, in other endocrine organs in 19; polyarthritis in 9 cases; humeroscapular peri-arthritis also in 9; rheumatic fever in 2, and nervous disorders in 5. Combined diabetes and thyrotoxicosis were encountered in 8 cases.

Prensa Medica Argentina, Buenos Aires

35:387-424 (March 5) 1948. Partial Index

*Sciatica With Intermittent Claudication Due to Enteroptosis. J. M. Obarrío.—p. 387.

Sciatica of Intermittent Claudication Type.—The author reports 3 women between the ages of 33 and 42 with subjective disturbances of sensation in the distribution of the greater sciatic nerve, and paresthesia, which disappeared in two patients and diminished in one when the patients were in the horizontal position and reappeared when they were in any other posture or when they walked. This type of sciatica is a form of neuritis of the greater sciatic nerve with intermittent claudication which can be unilateral or bilateral and which may be complicated by neuritis of other nerves originating in the lumbar or sacral plexuses. The main symptoms are pain and paresthesia. In some cases there is hyposthesia or hyperesthesia. The motor function, tone and nutrition of the muscles supplied by the sciatic nerve are frequently diminished. The neurologic signs correspond to the distribution of the greater sciatic nerve. The condition is due to enteroptosis with consequent compression of the sacral plexus in the pelvis by intestinal loops. The prognosis is favorable. The treatment consists of the correction of enteroptosis.

Presse Médicale, Paris

56:337-348 (May 8) 1948

*Myocardial Infarct Following Stellectomy for Angina Pectoris. D. Danielopolu.—p. 337.

Osteotomy in Pseudarthrosis of Neck of Femur. G. Menegaux and B. Lascoux.—p. 338.

Syndrome of Mauriac: Glycogenosis and Hepatomegaly. A. Hanns.—p. 339.

Myocardial Infarct Following Stellectomy.—Danielopolu stresses that when Lonnescio in 1922 reported his first case of angina pectoris in which stellectomy had been done, he at once objected to the interruption of the sympathetic fibers of the myocardium and of the coronary vessels, with their vasodilator effect, in a disorder in which the myocardium is frequently impaired and in which coronary spasm is one of the chief factors. That his warning was justified is proved by the fact that acute cardiac insufficiency, sudden death and myocardial infarct may follow stellectomy. In view of the fact that this operation has no other effect than the suppression of the pain in the chest and that it fails to prevent the attacks, which may prove fatal, he reemphasizes his warnings against any operation that suppresses the dilator system of the coronary circulation.

Schweizerische medizinische Wochenschrift, Basel

78:345-368 (April 17) 1948

*Bloodless Extensive Opening of Cavity and Its Therapeutic Prospects. G. Maurer.—p. 345.

Problem of Malpractice in Medical Profession. H. C. à Wengen.—p. 349.

Pretended Invulnerability of Body. (Animal Experiments to Test Miin Dajo's Performance). E. Schlupfer.—p. 352.

Pathogenesis of Hemorrhage of Retina and of Optic Nerve Sheath Associated with Acute Rise of Intracranial Pressure; Contribution to Casuistics of Intracranial Hemorrhage. R. Brückner, W. Bloch and Leni Wolf-Wiesinger.—p. 355.

Bloodless Opening of a Tuberculous Cavity.—Maurer describes a method of bloodless opening of a tuberculous cavity by which the occurrence of a phlegmon and of disadvantages associated with Monaldi's suction drainage may be avoided.

A cavity is punctured through the thoracic wall with a trocar consisting of a trocar point with steel wire, a Laminaria hollow peg which covers the wire, and a metal cap with central boring, a regulator screw and two side wings serving as handle of the instrument. The exchangeable Laminaria peg is the main feature of the technic. A set of pegs are employed 12 cm. in length but of diameters which increase 1 mm. each from 6 to 13 mm. The peg of smallest diameter is used first and is left in the puncture canal for twenty-four hours; it swells and is then removed to be replaced by a cavity catheter around which the puncture canal closes, thus preventing any infection. The catheter is replaced by a peg with a wider diameter. By several repetitions of this procedure a gradual dilatation of the granulation canal is obtained. The cavity contents are drawn off every morning. The closure of the draining bronchus occurs either spontaneously or by cauterization with the aid of the thoracoscope. Streptomycin therapy is instituted after the swollen Laminaria peg has been replaced for the last time by a 18 mm. cavity catheter which remains in the drainage canal for three days. A strip of gauze immersed in a streptomycin solution is introduced into the cavity; after that 0.1 Gm. of streptomycin in 12 cc. of an isotonic sodium chloride solution—1 cc. every two hours for twenty-four hours—is dropped on the gauze, which acts as a wick within the cavity. Local application of streptomycin may be combined with intramuscular injections of the drug. The tamponade of the cavity is repeated every two to four days. The method is indicated in cavernous phthisis no longer amenable to medical treatment or to surgical intervention because of the size and the location of the cavity, in respiratory insufficiency or in the presence of myocardial lesions or of severe extrapleural foci such as intestinal tuberculosis.

Wiener klinische Wochenschrift, Vienna

60:265-280 (April 30) 1948. Partial Index

Phantom Limb: Psychologic and Clinical Aspects. E. Menninger-Lerchenthal.—p. 265.

Ferment Inhibiting Substance in Pathogenesis of Cancer: Clinical Importance of This Theory. A. Christiani.—p. 267.

*Evaluation of Pleural Involvement in Course of Tuberculosis in Cases with Subsequent Skeletal Tuberculosis. A. Ravelli.—p. 271.

Penicillin in Treatment of Mastitis with Abscess Formation. A. Kotek.—p. 274.

*Flies as Carriers of Poliomyelitis Virus. F. Puntigam.—p. 276.

Pleurisy and Tuberculosis.—Ravelli stresses that tuberculous pleurisy appears as an early manifestation of tuberculosis and must be given the same serious consideration as the early tuberculous infiltration of lung. Pulmonary tuberculosis develops in 20 to 30 per cent of patients within two years of the appearance of tuberculous pleurisy. Tuberculous dissemination into the systemic circulation, particularly the skeletal system, is frequent. The author presents several case histories which demonstrate that tuberculous pleurisy may be followed within the year by a skeletal tuberculosis. A skeletal lesion may be recognized as tuberculous when the previous history reveals an attack of tuberculous pleurisy or when roentgenologic examination reveals traces of an earlier pleurisy. Thorough examination and sufficiently prolonged treatment and care of patients with tuberculous pleurisy may prevent the development of skeletal dissemination.

Flies as Carriers of Poliomyelitis Virus.—Puntigam says that the Canton Wallis and the city of Lucerne have employed a systematic eradication of flies by means of spraying with 1 per cent solution of DDT (4,4'-dichlorodiphenyltrichloroethane) for the last two years. Comparison of the morbidity figures for poliomyelitis before and during the time that flies were eradicated with DDT revealed that this measure had no influence on the course of outbreaks of the disease. The author points out that these investigations corroborate the opinions of Fanconi, who does not regard flies as the necessary intermediate hosts of poliomyelitis. It is possible that flies occasionally carry poliomyelitis virus as they do typhoid bacilli. For this reason it is advisable to combat flies in the sick room and its immediate surroundings and also to disinfect the excreta of patients with poliomyelitis.

Book Notices

Compulsory Health Insurance. By Elizabeth W. Wilson. Studies in Individual and Collective Security No. 3. Paper. Price, \$1. Pp. 138, with illustrations. National Industrial Conference Board, Inc., 247 Park Ave., New York 17, 1947.

The book is a cross between an actuarial and an economic treatise on the subject of sickness insurance. Miss Wilson is a student of statistics and uses charts and tables liberally in developing her arguments against compulsory health insurance; nor does she rely entirely on her own knowledge but draws from numerous sources in piecing together over five hundred quotations and references. The government's interest in health insurance is traced from the passage of Britain's National Health Insurance Act in 1911 to the introduction of the Wagner-Murray-Dingell bills. The Wagner-Murray-Dingell bills, especially the bill introduced in 1945, are exposed in their true light. The author considers carefully the problems of administration, particularly those in regard to malingering, adequate benefits, cooperation of personnel, methods of paying physicians and government interference. "Medical adequacy" and "economic feasibility" are considered important enough to require separate chapters. Completing the book is a long list of pros and cons on the subject, arranged in parallel columns to provide a quick résumé of the arguments on both sides of the subject. "Compulsory Health Insurance" is a refreshing book. Every medical society, medical school, hospital, and college library should have a copy on file.

Psychopathology and Education of the Brain-Injured Child. By Alfred A. Strauss, President, Cove Schools for Brain-Injured Children, Racine, Wis., and Laura E. Lehtinen, Educational Director, Cove Schools for Brain-Injured Children. Cloth. Price, \$5. Pp. 286, with 45 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1947.

This book presents the results of intensive psychologic and educational research over twenty years. It is a major contribution to the understanding and management of the child whose intellectual, personality and behavioral deficiencies result from organic damage to the brain. It is concerned primarily with children who do not have severe cerebral palsy or other motor involvement—a group which has been more neglected, probably, than any other type of mentally defective or neurologically afflicted child.

The first section of the book deals with the psychopathology of the child with an injured brain. After chapters on a historical review of the problems and anatomic considerations come the three most significant chapters of this section, describing the perceptual, conceptual and behavioral disorders of children with organic brain disease. There is a description of a number of ingenious psychologic tests for evaluating the kind and degree of disturbance of perception and concept formation. These tests are still qualitative rather than quantitative, but further research may lead eventually to their refinement on a par with the well established standardized psychometric technics. Some of the tests described are entirely original; others are adaptations or modifications of technics used in the more widely explored field of the psychopathology of the brain damaged adult. The research on behavior disorders is less satisfying; although there is a fairly clear picture of the behavior disturbances which result from brain injury, there seems to be no way of distinguishing behavior patterns resulting from such injury—such as lack of inhibition, hyperactivity, impulsive action and irritability—from similar patterns resulting from schizophrenia, neurosis or other emotional disorders.

The section on the education of the child with an organic involvement of the brain is rich in detailed descriptions of novel technics and devices for teaching this type of child. General educational procedures—such as the elimination of distracting stimuli from the outside, within the schoolroom and from study materials or the provision of manipulative devices—are geared to the specific defect. Illustrated and carefully described materials and methods are presented for the major educational areas of arithmetic, reading and writing. The variety and nature of the devices, facilities and technics described, the need for adaptations for each case and the slowness of the educative process in these children necessitate a special, and expensive,

school set-up for the child with an injured brain. However, teachers in institutions for the feeble minded, public school classes for the mentally handicapped and even in schools for normal children will find much that can be useful to them.

Clinical child psychologists and workers in the field of special education are the groups to whom this volume will be most directly and repeatedly useful. However, it is to be highly recommended, also, to neurologists, psychiatrists, pediatricians and all other physicians who have contact with disturbed or retarded children.

Techniques de laboratoire: Chimie physique, chimie biologique, chimie clinique. Par M. Abribat et al. Secrétaire de la rédaction: J. Lolsieur, chef de service à l'Institut Pasteur. Préface de M. J. Tréfouel, directeur de l'Institut Pasteur. Paper. Price, 1600 francs. Pp. 907, with 169 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris, 6^e, 1947.

This book attempts to correlate physical chemistry, biologic chemistry, and clinical chemistry. Its sequence is well carried out, beginning with general considerations of methods of examination. The first chapter discusses the various implements and solutions in titration fluids. The methods of measuring viscosity are explained.

There is a chapter by Latarjet, of the Institute of Radium of the Pasteur Institute of Paris, on radiations in biochemical technics. This is an unusual chapter and one of great importance. There is another chapter on photometric determinations of various absorbents.

In the third part on biological chemistry there is a complete and exhaustive description of microchemistry of the various metals.

The isolation, purification and crystallization of proteins is fully described by J. J. Perez, Chief of the Laboratory of the Pasteur Institute. There is a complete chapter on the potentiometer titration of proteins and also a complete story of certain amino acids. The nucleoproteins are fully discussed, as are lipids and glucides. An unusual chapter is that dealing with quantitative immunochemistry and its use in immunology and chemistry. The estimation of the various mineral elements in plasma is considered thoroughly.

The latter part of the book, devoted to clinical chemistry, will be found most interesting to clinical pathologists. There are taken up urinary acidity and the nitrogenous constituents of normal urine, as well as the fixed mineral elements of urine. Urinary albumin is the subject of a special chapter, and it is well described. There is a special chapter on the microscopic examination of urinary sediments. Another chapter is devoted to the pathologic variations of spinal fluid and of fecal material. The amount of sulfonamides in blood, urine, spinal fluid, and tissue is thoroughly described, as is the estimation of vitamins and hormones in biological fluids.

The function of the liver is discussed in a chapter entitled "Functional Activity of the Liver According to Blood and Urine Analyses." The functional activity of the kidneys is also considered fully.

All together, this is an excellent reference book for any laboratory. The latter portion of the book is especially interesting to the clinical pathologist.

A Text-Book of Pathology: An Introduction to Medicine. By William Boyd, M.D., M.R.C.P., F.R.C.P., Professor of Pathology and Bacteriology of the University of Toronto, Toronto. Fifth edition. Cloth. Price, \$10. Pp. 1049, with 530 illustrations. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1947.

The first edition of Boyd's "A Textbook of Pathology" appeared in 1932 and the new fifth edition in 1947. The average of one new edition each three years is an indication of the popularity of this book. The new edition maintains the same high quality of clarity and readability and the same scientific standards that characterized the preceding editions. In his preface to the first edition the author stated that the volume was "intended for students of pathology, whether undergraduate or postgraduate, and not for the pathologist and professional laboratory worker. . . . The object of the student should be to gain a grasp of the fundamental principles underlying the subject." Dr. Boyd has, therefore, presented the general principles of pathology with clearness and force and has pointed out the application of these principles

to the practice of medicine. "Pathology in relation to the living patient is the motif of this book."

The fifth edition consists of 1,049 pages, of which 351 are devoted to general pathology, 667 to special pathology and 29 to the index. It has been extensively revised, some parts have been rewritten and new material has been added. The author mentions 30 new sections that have been added. Among these are: lipotropic factors in relation to diseases of the liver, dermatofibroma, sclerosing hemangioma, myocardial infarction without coronary occlusion, Loefler's pneumonia, intestinal lipodystrophy, alloxan diabetes, renal anoxia, interstitial cell tumors of the testis, primary splenic neutropenia and fibrous dysplasia of bone. New material pertaining to twelve subjects has been added; among them are cystic fibrosis of the pancreas, folic acid in relation to macrocytic anemia, the pathogenesis of poliomyelitis, hemochromatosis, burns, Dock's observations on the structure of the coronary arteries and allergy in the production of lobar pneumonia. Seven sections have been entirely rewritten: carcinogenesis in its relation to enzymes and viruses, silicosis and anthracosis, necrosis and cirrhosis of the liver, Cushing's syndrome, the Rh factor in congenital hemolytic disease, ankylosing spondylitis and Volkmann's contracture. A section on allergy, omitted from the preceding edition, has been rewritten and reinserted.

The volume contains 500 illustrations, which, in general, are excellent, and 30 colored plates, illustrating both gross and microscopic lesions. Dr. Boyd's manner of presenting the general principles of pathology is positive and at times, perhaps, dogmatic, but his opinions are generally sound in the light of present knowledge. Pathologists, even if they found nothing new in the book, could learn much from the method of presenting a difficult subject. The practitioners of medicine or surgery will find it useful if they desire "to indulge in the periodic brain dusting recommended by Osler." This book is well printed on paper that is only slightly glossy and can be read without undue eye strain.

Glomerular Nephritis: Diagnosis and Treatment. By Thomas Addis, M.D., F.R.C.P. Cloth. Price, \$8. Pp. 338, with 59 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

For four decades Thomas Addis has been a path-finding investigator of the kidney in health and disease. His many studies have significantly advanced understanding of the function and architecture of the pathologic kidney and the clinical aspects of renal disease. This lifework has now culminated in a monograph: "Glomerular Nephritis: Diagnosis and Treatment." Actually, the book contains much more than the title suggests. It serves as a medium for presenting not only Addis' often unorthodox views on Bright's disease, but also his basic philosophy of medical practice at a time when accumulation of knowledge in diverse fields has rendered it more difficult for the individual physician to insure his patient the maximum available help. The book starts with a chapter on relatively simple laboratory methods developed by Addis, which require few facilities and little technical help but nevertheless are sufficiently accurate for guidance of treatment. A brief section on dietetic principles follows. Means for inferring the nature and extent of a renal lesion are elucidated in detail. After an interesting development of the basic principles of classification of disease in general and of renal maladies in particular, the differential diagnosis and clinical picture of glomerular nephritis are covered in extenso. Finally, the treatment of glomerular nephritis is discussed, with a useful appendix on quantitative dietetics for patients.

Addis' monograph is the antithesis of a textbook. It is largely a presentation of his own observations and experiments—many not previously published—with little discussion of literature. Addis has decided views on many controversial problems and presents detailed evidence in support of his opinions. Particularly documented are the descriptions of his many years of experimentation with partial ablation of the kidneys in rats and the effects of various diets on survival. Largely on the basis of these experiments, Addis feels that impairment of renal function in glomerular nephritis may be retarded by diets as low in protein as is consistent with good nutrition. He holds that greater "osmotic work" by the tubular cells when more urea is excreted accelerates failure of the

kidney and that a low protein diet "rests" the kidney. Addis thus advocates a return to dietetic treatment in vogue twenty-five years ago and since generally abandoned. It does not seem that enough evidence is presented to justify protein restriction over the often decade-long course of chronic glomerular nephritis. The description of the urinary sediment is highly original and the best with which the reviewer is acquainted. In a section headed "Abnormalities in Plasma Protein Formation," Addis accepts as an independent entity what is generally known as lipid nephrosis. He describes a cyclic course with complete clearing and recurrence; this the reviewer has not seen.

This book is an important contribution which will reward the close attention of serious students of Bright's disease and should leave an imprint on thought and practice in the field.

The Pathology of Nutritional Disease: Physiological and Morphological Changes Which Result from Deficiencies of the Essential Elements, Amino Acids, Vitamins, and Fatty Acids. By Richard H. Foellis, Jr., M.D., Associate Professor of Pathology, Duke University School of Medicine, Durham, N. C. Fabrikoid. Price, \$6.75. Pp. 291, with 72 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1948.

This readable and not too lengthy monograph is a scholarly and critical review of current knowledge of nutritional disease. The main emphasis is on the morphologic end results of the deficiencies, with perhaps less attention paid to biochemistry and physiology than some would like. Each of the forty or more indispensable nutrients is treated separately. Seventeen or eighteen of the ninety-odd metallic and nonmetallic elements are included, as well as ten of the twenty-odd amino acids, three closely related fatty acids and fifteen vitamins, in which there is evidence in one or more species for indispensability. The abnormalities in mammals provoked by deficiencies of these several substances are described. Illustrations add to the value of the book. They are numerous and excellent. Many of them are original. The bibliography of about 800 references covers most of the important literature. Although little attention is given to diagnosis of nutritional disease in man, the clinical aspects of the subject are not entirely neglected.

Much information has been accumulated in the last few decades to explain the action of the several essential nutrients, but much is wanting to complete the picture. A conspicuous gap in current knowledge is the lack of correlation of anatomic and biochemical changes. "Biochemists can thank pathologists for many of the leads which have opened up horizons in physiological chemistry; the reverse is true as well. But it is unfortunate that the twain so seldom meet." The author further emphasizes the point that as yet "no single nutrient has been simultaneously studied from the biochemical, physiological and morphological standpoints—something which is greatly to be desired."

Proteins and Amino Acids in Nutrition. Edited by Melville Sahyun, M.A., Ph.D. Cloth. Price, \$7.50. Pp. 566, with illustrations. Reinhold Publishing Corporation, 330 W. 42nd St., New York 18, 1948.

This is designed to supplement and extend an earlier volume edited by Dr. Sahyun, "Outline of the Amino Acids and Proteins." Since certain aspects of the intermediary metabolism of special amino acids were considered in some detail in the earlier volume, the treatment of certain phases of protein metabolism in the present volume is somewhat limited. These gaps are readily remedied if the two books are used jointly as a source of information on the metabolism and nutritional value of proteins and amino acids.

The opening chapter of the present volume is an extensive discussion of "Proteins in Nutrition (Historical)," which is supplemented by 18 photographs of men whose work is important in this field (from Magendie, 1781, to Lafayette B. Mendel, 1872). This historical treatment is not duplicated in English elsewhere to the knowledge of this reviewer. While it is difficult and perhaps unfair to single out individual chapters as of unusual excellence, 3 may be mentioned as unique. The chapter on "Caloric, Vitamin and Mineral Requirements with Particular Reference to Protein Nutrition" is concerned with an aspect of proteins which has assumed special importance in recent years and well merits the 39 pages devoted to it. Another chapter, "Economic Aspects of Food Proteins (66

pages)," discusses sources of protein food, proteins in diets of human beings, animals as food protein converters, economic aspects of food protein purchases, population in relation to food protein supplies and many other practical aspects of protein nutrition. Much of this material has not heretofore been assembled and thus organized. Mention must also be made of the fine discussion of the "Relation of Hormones to Protein Metabolism."

The clinician will find much of value in the 6 chapters devoted to problems of clinical interest, such as "Plasma Proteins and Their Relation to Nutrition," "Proteins Nutrition in Surgical Patients" and "Proteins as Related to Burns." The volume concludes with 2 chapters on "Toxins, Antitoxins and Related Substances" and "Filtrable Viruses."

An appendix which presents tables of food composition should be of particular value to dietitians. Each chapter concludes with an extensive bibliography, useful to students and research workers in particular.

The book can be highly recommended to the physician who wishes to extend his knowledge of proteins in nutrition as an up-to-date work of reference and to medical students and workers in nutrition and public health.

Human Physiology. By F. R. Winton, M.D., D.Sc., Professor of Pharmacology, University College, London, and L. E. Bayliss, Ph.D., Reader in Physiology, University College, London. Third edition. Cloth. Price, \$7. Pp. 592, with 248 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1948.

In this edition the two original authors (Drs. Winton and Bayliss) have become essentially editors, as in fourteen of the fifteen chapters other scientists and specialists are listed as primary contributors. This textbook of physiology for medical students is purposely condensed to about half the number of pages in the standard American text on this subject for students in medicine. The author-editors are convinced that medical students today are compelled to memorize and master too many facts at the expense of thinking and analysis: "The medical student is expected to know too much and to think too little." The condensation is achieved at the expense of elimination of much of the factual data on man and especially on other animals on which the generalizations and conclusions are based. One may question whether this is an aid to thinking on the part of our medical students. There can be no criticism of the endeavor to confine the data presented, so far as possible, to human physiology. But the inclusion of pertinent historical references and conclusive experiments on other animals is a stimulus to thinking, particularly for doctors, as long as we must depend on animals for the source and standardization of essential medicines, not to speak of the understanding and control of malnutrition, infections, cancer, etc. The illustrations are clear and helpful. The presentation is usually precise and factual. Some loose thinking is liable to slip into any textbook. This volume is no exception. We are told (p. 2) that: "perhaps the most characteristic feature of health is that a man can move about as quickly and for as long as he likes." This is not true. Competing athletes will testify to the contrary, and even the healthy man, trying to run from the charging tiger, is not lacking in will but in speed.

Nursing in Tuberculosis. By Louise Lincoln Cady, R.N. Cloth. Price, \$3.75. Pp. 481, with 64 illustrations. W. B. Saunders Co., 218 W. Washington Square, Philadelphia 5, 1948.

This book contains a large store of information of value to all nurses. The material is presented in four sections as follows: (1) "Hospital Aspects," (2) "The Nurse's Part in Treatment and Control," (3) "Nursing Aspects" and (4) "Educational, Social and Other Problems." In the first section appears a fine chapter concerning the nurse's work in the tuberculosis hospital and another on the public health nurse in the tuberculosis hospital. The final chapter in this section is devoted to prevention of tuberculosis among nurses. Following a discussion of the problem, some of the methods that have been employed to protect nurses are discussed, such as examining all patients admitted to general hospitals, the student health program of general hospitals, education of the patients and communicable disease technic, in which the author points out that such technic has been effective in the control of other con-

tagious diseases and therefore should be useful in tuberculosis. In the discussion of artificial immunization a few statements appear with which a great many workers in tuberculosis in this country may take issue. Among the 5 chapters under the second section is an excellent chapter on the nature of tuberculosis and another on epidemiology. The first chapter in the third section is entitled "Tuberculosis Case-Finding." This is devoted almost entirely to the roentgen method of case-finding. The chapter entitled "The Nurse's Part in Establishing a Diagnosis" contains information valuable to the nurse, pertaining to all of the diagnostic procedures, including bacteriologic studies and tuberculin tests. An excellent chapter is devoted to the general nursing care of the tuberculous patient. This is followed by a chapter on "Communicable Disease Precautions," in which the use of gowns and masks is described and evaluated. Considerable space is devoted to nursing care in collapse therapy, including artificial pneumothorax and the various surgical procedures. Oxygen therapy is also given considerable attention in this connection. Entire chapters are devoted to "Tuberculosis in Pregnancy," "Diabetes" and "Extrathoracic Tuberculosis," such as of the bones and joints and genitourinary tract. The last section of the book is composed of 8 chapters devoted to such subjects as "Health Teaching in the Home," "Mental Hygiene," "Rehabilitation of the Tuberculous Patient," "The Tuberculosis Clinic" and "Tuberculosis Legislation." This book can be recommended as a valuable addition to the libraries of students and graduates of nursing.

Kompndium der topischen Gehirn- und Rückenmarksdiagnostik: Kurzgefasste Anleitung zur klinischen Lokalisation der Erkrankungen und Verletzungen der Nervenzentren. Von Dr. Dr. h. c. Robert Bing, ordentlicher Professor der Neurologie an der Universität Basel, Basel. Tenth edition. Cloth. Price, 25 Swiss francs. Pp. 288, with 133 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16; Benno Schwabe & Co., Klosterberg 27, Basel 10, 1948.

This is the thirteenth edition of Bing's compendium, and it continues to occupy first place in its value as a compend for students, physicians and postgraduates in neurology. It contains 130 illustrations and 3 plates. It is divided into three parts, namely: (1) localization of spinal cord lesions in transverse and longitudinal planes; (2) localization of cerebral lesions; (3) lesions of the cerebrum, the basal ganglia and the hypophysis. There is an excellent discussion on cerebral and basal aneurysms. This book is highly recommended to physicians who can read German.

The Anatomy of the Eye and Orbit, including the Central Connections, Development, and Comparative Anatomy of the Visual Apparatus. By Eugene Wolff, M.B., B.S., F.R.C.S., Ophthalmic Surgeon, Royal Northern Hospital, London. Third edition. Cloth. Pp. 440, with 323 illustrations. The Blakiston Co., 1012 Walnut St., Philadelphia 5, 1948.

The present volume proves that anatomy of the eye, together with general anatomy, is not a static subject. In addition to making a number of corrections the author has added more than 80 illustrations, the total number being 323, which makes for more ease in the study of this fascinating subject. Research in recent years has made it necessary for changes to be made in the descriptions of the ciliary muscle, the substantia propria of the cornea, the vitreous, the zonule of Zinn, the distribution of the lacrimal fluid, the mucocutaneous junction at the lid margin, the precorneal film, the retinal capillaries and the central connections of the visual apparatus. The volume has a beautiful format, many illustrations and clear and concise descriptions. It deserves a place in every library where the slightest interest in general anatomy, and specific anatomy of the eye and orbit, may arise.

Pathologie des zones pulmonaires. Par H. Warembourg, professeur agrégé à la Faculté de médecine de Lille, Lille, et P. Graux, médecin des hôpitaux de Lille, Lille. Préface du Professeur Jean Minet. Paper. Price, 380 francs. Pp. 141, with 70 illustrations. Masson & Cie, 120 Boulevard Saint-Germain, Paris 6^e, 1947.

A thorough knowledge of the anatomy of the pulmonary zones has assumed an importance not yet sufficiently appreciated, as a basis for the interpretation of anatomic and clinical findings in pulmonary and pleural disease. The work discusses in well illustrated text the various pulmonary zones and their interzonal barriers, and their relation to the branches of the bronchial tree. A clinical presentation of illustrative cases completes the book.

Chemical Russian, Self-Taught. By James W. Perry. Contributions to Chemical Education, Number 1. Cloth. Price, \$3. Pp. 221. Journal of Chemical Education, 20th and Northampton Sts., Easton, Pennsylvania, 1948.

According to the author of this volume, more chemical research is being reported in Russian than in any other language, except English. The need for chemists to be able to read chemical Russian has developed to a critical point. The author feels that the reading of chemical Russian can be learned by self instruction during spare time. This volume is offered as an aid. The first two sections of the book discuss aptitude for learning languages in general and methods for studying Russian in particular. The third section summarizes Russian word-building methods of importance with regard to scientific terminology. The fourth and fifth sections review inorganic and organic nomenclature. The final section of this book is an alphabetic glossary of technical terms of particular importance to chemists. It is suggested that the book be used by chemists in conjunction with a dictionary and a grammar. Callahan's "Russian-English Technical and Chemical Dictionary" is recommended.

Annata terapeutica 1947. M. Coppo, redattore capo; N. Allotta, direttore resp. "Clinica nuova," Supplemento annuale di aggiornamento terapeutico. Paper. Price, 1200 lire. Pp. 672, with illustrations. Clinica Nuova, Casella Postale 164, Rome, [n. d.]

This volume, written in Italian, contains in alphabetical arrangement a list of diseases with comparatively brief discussions on the diseases and measures of treatment. Interspersed throughout the book are advertisements for articles, some of which seem out of keeping with the title of the volume. For those in the United States the book provides an interesting reflection of therapy in some European centers; otherwise, it is of limited value to American medicine, as exception could be taken to some of the proposed treatments.

Rocky Mountain Conference on Infantile Paralysis, December 16 and 17, 1946, Denver, Colorado. Sponsored by the University of Colorado School of Medicine and Hospitals, and the National Foundation for Infantile Paralysis, Inc. Paper. Pp. 199, with illustrations. University of Colorado, School of Medicine and Hospitals, 4200 E. 9th Ave., Denver 7, 1947.

In December 1946 a conference on infantile paralysis was held under the sponsorship of the University of Colorado School of Medicine and Hospitals and the National Foundation for Infantile Paralysis. The proceedings of that conference are reported in this volume. The papers together with the discussions are presented through the use of planographing.

Many of the most able research scientists in the field of virus diseases, as well as prominent clinicians, presented papers or took an active part in the round table discussions. The subjects in this report include: "Epidemiology of Poliomyelitis," "Problems in the Field of Virus Infections," "Bulbar Poliomyelitis" and "The Care of the Polio Patient."

The material contained within this volume should be considered an indispensable addition to the library of each investigator or clinician who is currently concerned with any part of the problem of poliomyelitis.

Biology of Disease. By Eli Moschowitz, M.D. Mt. Sinai Hospital Monograph No. 1. Cloth. Price, \$4.50. Pp. 221, with 1 illustration. Grune & Stratton, 381 Fourth Ave., New York 16, 1948.

This monograph is a collection of essays on various diseases in which the author has had a special interest. Most of the essays had appeared individually in medical journals. Moschowitz attempts to integrate the concepts in regard to a number of diseases by elucidating the evolution of various diseases from their larval to their terminal states and also by pointing out the manifold interrelationships between many common disease syndromes. The topics selected for discussion vary from common diseases such as hypertension, arteriosclerosis and obesity to rarely encountered conditions such as myeloma, Libman-Sacks disease and polycythemia vera. The outlook of the author is broad and stimulating. Only those aspects of the diseases considered which are of special interest to the author are taken for discussion; the treatment is not exhaustive. The style is clear. The qualities which make this book distinctive are also its points of weakness; by attempts at broad integration some overgeneralization and speculation have occurred.

The 1947 Year Book of Endocrinology, Metabolism and Nutrition. Endocrinology. Edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Metabolism and Nutrition. Edited by Tom D. Spies, M.D., Chairman, Department of Nutrition and Metabolism, Northwestern University School of Medicine, Chicago. Fabrikoid. Price, \$3.75. Pp. 575, with 86 illustrations. Year Book Publishers, 304 S. Dearborn St., Chicago 4, 1948.

This book again is divided into two sections, the first being reserved for endocrinologic problems and the second for metabolic and nutritional considerations. In the endocrine section are abstracts of articles, with frequent comments by the editor, related to observations made in man and to some animal experiments considered to have a bearing on the interpretation of clinical phenomena. Among the glands about which there are articles are the pituitary, thyroid, parathyroid, adrenal, testes and ovaries.

The section on metabolism and nutrition has been arranged to permit grouping of the abstracted articles into those concerned with the pancreas and liver, alimentary tract, hemopoietic system, cardiovascular system, the brain and nervous system, genitourinary system, dermal, muscular and skeletal systems, malnutrition and therapy. The editors of the two sections have done a creditable job in choosing articles of interest primarily for the general practitioner, but which also may be helpful for the specialist. Like the other volumes in this series, the book will be welcomed by many as a useful addition to their libraries.

How to Help Your Child Grow Up: Suggestions for Guiding Children from Birth Through Adolescence. By Angelo Patri. Cloth. Price, \$4. Pp. 352. Rand McNally & Co., 536 S. Clark St., Chicago 5, 1948.

Dr. Patri needs no introduction, for he has possessed the reputation of a leader in education and child guidance for many years. The material in this book is an adaptation of the material used in Dr. Patri's widely syndicated newspaper column "Our Children." The book is divided into sections which are in turn divided according to subject. The subject index in the back of the book enables one easily to find references to such parental worries as eating habits, health, arithmetic, gambling, money and unmanageable child. The advice is always simple, sound and practical. This book is valuable reading for every parent. Because it discusses all those nonmedical problems which often worry parents more than the usual illnesses of childhood, this book should be on every pediatrician's and general practitioner's reference shelf.

"Onchocercosis" (enfermedad de Robles). Homenaje al tercer Congreso pan-americano de oftalmología, La Habana, enero 1948. Universidad de San Carlos, Facultad de ciencias médicas. Asociación oftalmológica de Guatemala. Paper. Pp. 257, with 74 illustrations. Guatemala, C. A., 1947.

In this study of the problem of onchocercosis in Guatemala, originally presented at the Third Pan-American Congress of Ophthalmology, the several phases of the problem of onchocercosis are discussed in individual chapters by Guatemalan physicians who have devoted considerable time to a detailed analysis of the disease in Guatemala. Historic, geographic factors, epidemiologic and important pathologic considerations are discussed in detail. Seventy-four excellent plates showing typical pathologic lesions of the disease are included. Because of the excellent initial work of Dr. Rudolph Robles in this disease, it has been suggested that the disease be named "Robles disease." The report is well annotated and contains many useful references to investigation of this disease in other areas.

Kinesiology Laboratory Manual. By Leon G. Kraus, M.S., Professor of Physical Education and Chairman of the Department, Northwestern University, Evanston, Ill. Looseleaf. Paper. Price, \$2.75. Pp. 177, with illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1948.

This manual, in loose leaf plastic binding, is intended primarily for students of physical education, and for them it has definite value. It presents clearly and logically the origin, insertion, leverage and action of important muscles of the human body. The author has added an observation to each of them, especially with regard to their use in sports and other physical activities. The illustrations are excellent and easily understandable.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PNEUMOCOCCUS POLYSACCHARIDES

To the Editor:—What is the status of immunization against pneumococcus infection by means of the polyvalent pneumococcus polysaccharides? I have taken a somewhat skeptical attitude because of the great number of antigenic factors introduced.

M.D., New York.

ANSWER:—From the few studies published it appears that specific immunity against pneumococcal pneumonia can be achieved by vaccination with specific polysaccharides. In one report (*J. Exper. Med.* 82:445, 1945), a large group of persons was vaccinated with solutions of the capsular substances of pneumococcus types I, II, V and VII. Cases of pneumonia caused by these respective pneumococci were greatly reduced in number thereby, but the number of cases caused by other types of pneumococci was about the same as in former years. In a subsequent series of papers in the September 1947 issue of the *American Journal of Hygiene*, vaccination was shown also to reduce the carrier rate.

Because of the declining incidence of pneumococcal pneumonia in general, it is questionable if attempts to immunize persons routinely against it are worth while. Even during epidemics of minor infections of the respiratory tract such as colds, pharyngitis or influenza, the incidence of pneumococcal lobar pneumonia is usually only 1 to 1,000 or less. Under special circumstances it is, of course, important to prevent pneumonia, as, for example, (a) in small, localized outbreaks in institutions, military groups and schools, but by the time immunization is established, the outbreak is usually finished; (b) in patients with chronic diseases or in debilitated persons who are apt to be exposed to infection; (c) for the unusual type of person who has repeated attacks of pneumococcal pneumonia or other localization with the same or with a different type of pneumococcus, and (d) for members of a family or nurses strongly exposed to a patient with the disease.

"AMBERLITE"

To the Editor:—On Feb. 8, 1948 Exploring the Unknown, Research Institution of America, broadcast a program of a new treatment for hyperacidity and gastric ulcers with a resin which they claimed for superior to the alkaline aluminum hydroxide. Kindly advise whether there is any virtue in this treatment. If so, what firm manufactures it and under what name? Chas. W. Hartwig, M.D., Cockeysville, Md.

ANSWER:—Probably "amberlite IR IV" is the material in question. This is an anion exchange resin capable of reducing hydrogen ion concentration of gastric juice in vivo and in vitro, as well as inactivating pepsin. It has been shown to be practically nontoxic for rats or man when taken orally. For practical clinical use a fine mesh must be used to provide maximum exposure surface for absorption of acid. A 200 mesh material has generally been employed.

Early clinical trials indicate that "amberlite IR IV" is a quick acting, effective acid neutralizer that will relieve the pain of peptic ulcer. The resin is insoluble and does not disturb acid-base balance. Because of the undesirable formaldehyde-like smell and the gritty, sandy taste, capsules may be more desirable than the straight powder form of administration. Though small doses, as low as 0.25 Gm., will reduce acidity, this reduction is apparently transient, and large repeated doses, as high as 0.60 Gm., need be given to reduce the acidity to effective low or negative values. The ideal dosage has not yet been determined. Recurrences and complications have occurred with resin therapy, even while the material was being taken. The effects of neutralization are transient as with other antacid therapy.

It is unwarranted to conclude at this time that "amberlite IR IV" is superior or even equal to the usual antacids for neutralization of gastric acidity in the clinical management of peptic ulcer. Further carefully controlled studies by competent clinical observers are needed for proper evaluation. The resin is still limited to investigational use, and may be obtained from the National Drug Company, Philadelphia, or the Resinous Products and Chemical Company, Philadelphia.

CURE IN SYPHILIS

To the Editor:—A white man aged 21 years acquired a chancre in May 1946. He was treated for one week with multiple injections of penicillin (amount unknown, but given in a United States Army hospital). At that time his blood serologic reaction was negative. All subsequent blood serologic reactions have been negative. Spinal fluid serologic reaction was negative one year ago, and is negative now. Evidence of any type of recurrence is absent. 1. What is the likelihood of relapse? 2. What further testing should be done, and at what interval? 3. May he marry now; if not, when? 4. If he marries now, what tests, if any, should be done for his wife (a) if pregnancy occurs and (b) if it does not?

M.D., Massachusetts.

ANSWER:—1. It is possible but not likely that a relapse will occur in this case because the most dangerous period from the point of view of relapse is in the first two years after treatment has been completed. His syphilis was treated at the most opportune time; i. e., during the seronegative chancre stage. 2. There should be a general physical examination and blood test performed every six months for about five years. It is not necessary to examine the spinal fluid again in this case. It is a good working rule that if for five years after completion of treatment all tests give repeatedly normal results, the patient may be considered as cured for all practical purposes. 3. He may marry at any time. 4. (a) During pregnancy the wife's blood should be tested in the first month and again in the sixth month. (b) In the interest of caution, the wife's blood should be tested three to four months after marriage.

CHRONIC ALCOHOLISM

To the Editor:—I have several patients for whom their families have requested treatment for chronic alcoholism. I have started the use of the McBride treatment of increasing doses of atropine and strychnine in an effort to render the taste of liquor unpleasant. Would you please advise on the value of this treatment or of better therapy. Can you recommend centers or physicians in the Southwest who make a specialty of this treatment?

M.D., New Mexico.

ANSWER:—Strychnine without atropine has been used by Perisson (*Union méd. du Canada*, 72:317 [March] 1943), and an evaluation of the treatment may be found in Queries and Minor Notes, J. A. M. A. 126:138, 1944. The answer to this query points out that alcohol in the inebriated person is completely oxidized or eliminated within twenty-four hours after he has stopped drinking, so that after this it is no longer a question of combating the narcotic action of the alcohol by strychnine. Also, the period of heightened nervous irritability following alcoholic excesses might be further aggravated by strychnine. The addition of atropine to strychnine might have some slight value as aversion treatment. The aversion treatment which appears to be effective in about 50 per cent of the cases is that developed by Voegtlin and his associates. Even with this method the recent writings of Voegtlin and Lemere (*Quart. J. Stud. on Alcohol*, 2:782-785 [March] 1942) indicate that considerable additional psychotherapy is usually necessary to insure success. These authors reported unfavorably on the use of strychnine and atropine. The information available regarding the McBride treatment would indicate that no centers or physicians using this treatment in the Southwest or elsewhere should be recommended.

KELOID

To the Editor:—It is my impression that excision followed by roentgen therapy is the most effective form of treatment for keloids. What is the cause of this condition, its incidence in the white race and other forms of therapy?

Gale D. Johnson, M.D., Dunn, N. C.

ANSWER:—The cause of keloid formations is unknown. The Negro race is especially subject to them, but they may appear in any one at any age and equally often in the sexes. It is believed that those which arise spontaneously follow insignificant injuries, such as insect bites. Otherwise, these growths may follow injuries, burns or infections. Certain varieties of the latter, such as scrofuloderma, are prone to keloidal complication.

The most effective treatment is radiotherapy. Roentgen rays or radium may be used. When the keloids are of recent origin and small, radiation alone suffices in many instances. When they are older and large, it may be necessary to excise them and to follow the surgery by using roentgen rays or radium. Some keloids, such as those following gasoline, hot water and chemical burns, may require only excision or grafting in addition if extensive. Ordinarily, surgical treatment alone without radiation, however, invites return of the keloid in somewhat larger dimensions. Other methods for removing these growths have been described and found useful. None of them, however, is reliable, and radiotherapy remains the treatment of choice.

ECLAMPSIA

To the Editor:—The literature generally describes the typical, pathologic findings in eclampsia as a periportal necrosis of liver due to thrombosis of the smaller portal veins. Has experience been reported on the use or value of anticoagulants in combating this lesion?

Charles E. Galt, M.D., Carlsbad, N. M.

ANSWER.—In a recent article J. Van S. Maeck and H. Zilliacus (*Am. J. Obst. & Gynec.* 55:326-331 [Feb.] 1948) present evidence from the literature to show that in pregnancy, and especially in toxemia of pregnancy, at least one substance (fibrinogen) and possibly a second (thromboplastin) is present in increased amounts and that in eclampsia the coagulation time of the blood is decreased, thereby predisposing to generalized, diffuse thrombi. It is logical to assume that heparin in part, because of its anticoagulant action through its ability to neutralize thromboplastin and fibrinogen (?) and because of its antiagglutination effect, can inhibit the pathologic changes and favorably influence the clinical findings. A case of toxemia is presented in which abrupt and decided improvement which continued was observed nine hours after treatment intravenously with 150 mg. of heparin. Three additional cases of toxemia treated in Finland are mentioned. In 1 of these, a case of severe toxemia and eclampsia continuing post partum, definite improvement was noted after heparin therapy at a time when the prognosis was exceedingly grave.

However, caution must be exercised in the use of anticoagulants in cases of toxemia, in which there is nearly always an hepatic disturbance and also some renal involvement. According to N. W. Barker (*M. Clin. North America* 29:929-935 [July] 1945) among the contraindications to the use of "dicumarol" are the presence of definite hepatic insufficiency and the presence of definite renal insufficiency because these conditions greatly prolong and increase the effect of "dicumarol."

UMCKALOABO

To the Editor:—Can you give me any information about a drug called "Umckaloabo"? I understand that this was mentioned in a book called "Burma Surgeon" and is supposed to be of some value in the treatment of tuberculosis; at least my information is that it is used for this purpose in Burma.

James W. W. Dimon, M.D., Utica, N. Y.

ANSWER.—"Umckaloabo" probably refers to "umckaloabo," a plant or group of plants of somewhat dubious origin. Apparently, about 1900, a quack by the name of Charles H. Stevens brought some plants from South Africa to England, from the bark of which he prepared an extract which was exploited for many years as a "consumption cure." A complete history of the Stevens consumption cure was published by the Bureau of Investigation of the American Medical Association in *THE JOURNAL*, 95:951, 1930. The extract used by Stevens was claimed to be "umckaloabo."

An article in *Dental Cosmos*, 57:1366, 1915, stated that "umckaloabo" refers to a group of South American herbs employed as infusions by the natives for all diseases of an infectious nature. A 5 per cent solution of the native tincture has been reported to be antiseptic. Bernoulli and Thomann in their book "Übersicht der gebräuchlichen und neueren Arzneimittel," 1946, also mentioned "umckaloabo" as a fluid extract of a South African plant, which has been claimed to be useful in infections.

Apparently the term "umckaloabo" does not refer to a specific substance or even to a specific plant but has been applied to various plants and extracts obtained in widely separated parts of the world. A search of the scientific literature for the past fifty years reveals no information with regard to its successful use in tuberculosis.

DIETARY LAW

To the Editor:—Is there any gastric distress and consequent gastric disturbance from using both animal and liquid albumin (casein—albumin) at one meal? The Jewish dietary laws do not allow the consumption of meat and dairy products at the same time.

M.D., Pennsylvania.

ANSWER.—While substantial reasons are now apparent for many of the old dietary laws, some of them are not supported by evidence. We know of no reason for avoiding the ingestion of meat and milk or fish and milk at the same meal. There is nothing in either of these combinations to make them dangerous when combined, unless one or both of the combination is contaminated.

ACETYSALICYLIC ACID

To the Editor:—Is it possible to make a solution or a suspension in which acetylsalicylic acid will remain stable?

E. A. Fry, M.D., Columbus, Ohio.

ANSWER.—Acetylsalicylic acid hydrolyzes in the presence of water to free salicylic and acetic acids. This action is hastened in aqueous mediums containing either acid or alkaline constituents. The decomposition of acetylsalicylic acid may be inhibited somewhat by substances such as glycerine or sugars. (A relatively stable solution may be made by dissolving the required amount of acetylsalicylic acid in a mixture of equal parts of alcohol and glycerine.) It is considered impractical to make a solution or a suspension of acetylsalicylic acid which will remain completely stable; for that reason it is suggested that sodium salicylate might be used in place of acetylsalicylic acid.

CONGENITAL SYPHILIS

To the Editor:—The serologic reactions of a young married woman, now pregnant, with congenital syphilis without physical manifestations were not altered by adequate antisyphilitic therapy. She is now receiving additional antisyphilitic therapy with penicillin, oxophenarsine hydrochloride and bismuth compound. What procedure should be followed to determine whether or not the expected infant is affected? In view of the mother's positive serologic reactions I presume that the cord blood and the infant's blood may show positive serologic reactions.

Benjamin Trachtman, M.D., Brooklyn, N. Y.

ANSWER.—It would be most unusual for this infant to be born with syphilis: (a) because the mother will have had sufficient treatment to protect the infant, and (b) because undoubted instances of third generation syphilis are extremely rare. The infant's status may be established by means of repeated blood tests, physical examination and roentgenograms of the long bones.

The blood of both mother and infant should be examined by a quantitative method. If the infant's blood gives a positive reaction even though there is no syphilis, the titer should be as low as or lower than that of the mother and there should be a negative reaction in a few weeks. If the titer of the infant's blood is greater than the mother's and if it continues to rise, it indicates that syphilis may be present. All tests should be performed in the same reliable laboratory.

The clinical manifestations of congenital syphilis are usually apparent by the third or fourth week and consist of an eruption of syphilids, snuffles, rhagades, an enlarged spleen, cracked lips and a peculiar cry.

Roentgenograms of the long bones for evidence of osteochondritis should be taken routinely in the first six weeks of life. According to Stokes, progressing osteochondritis which may occasionally be accompanied by periostitis occurring in a seropositive infant during the first six weeks of life may be considered as establishing a diagnosis of syphilis. One must not confuse the syphilitic changes with epiphyseal and periosteal lesions that may be produced by other conditions, particularly by bismuth salts used for the treatment of the mother during pregnancy.

RABIES VACCINE REACTION

To the Editor:—Will prophylactic rabies vaccine cause suppurative meningitis? A white man aged 35 years became lethargic, then unconscious; had a stiff neck, a temperature of 103 to 105 F., a white blood cell count of 21,000 to 25,000 and spinal fluid showing 300 plus pus cells per cubic millimeter; 90 per cent polymorphonuclear leukocytes and no bacteria on smear. Two spinal fluid cultures were negative. Illness occurred following nine prophylactic rabies injections. Vaccine was provided by the U. S. Public Health Service at Little Rock, Ark. (ultraviolet killed preparation). Pellicle formation occurred in the spinal fluid. The patient's recovery was uneventful after treatment with streptomycin and penicillin intramuscularly and intrathecally and administration of mixed sulfadiazene, sulfathiazole and sulfamerazine. Residual effects were absent. Apparently unusual in his clinical picture was a lethargic state without evidence of excitement.

Karlton H. Kemp, M.D., Texarkana, Ark.-Texas.

ANSWER.—Prophylactic rabies vaccine will not cause suppurative meningitis. This type of meningitis is always due to bacterial invasion and not virus infection. Your patient had an attack of encephalomyelitis due either to a postvaccinal rabies reaction or faulty vaccine, and an attenuated form of rabies resulted. From the history given your patient probably had an attack of postvaccinal encephalomyelitis involving the cerebrum primarily. Although there are quiet attacks of rabies (without excitement) because of early paralysis, your patient on the basis of history alone did not have rabies but a reaction from the vaccine.

HEREDITY OF HARELIP

To the Editor:—A married female patient was born with a harelip. She and her husband desire children. Is the incidence of harelip increased in the offspring of "harelip" mothers?

Louis N. Speer, M.D., Ottawa, Kan.

ANSWER.—Harelip frequently occurs sporadically or as a single case in families. Sanders reports from Holland more than 200 such cases. However in about 50 per cent of all his cases 2 or more cases occurred in each family, sometimes with a generation skipped—hence indicating a recessive mode of inheritance. Many other pedigrees give evidence of heredity. Many of these permit no statement regarding the mode of inheritance. In a recent monograph on harelip and cleft palate by Fogh-Anderson the author wrote: "It is impossible to demonstrate with certainty any other etiologic factor than a hereditary predisposition." Regarding the mode of inheritance he concluded that the most likely manner of inheritance is that of a "conditioned dominant" with some sex differences (more males than females) and with homozygotes manifesting the condition more often than heterozygotes. In other words he considers the anomaly largely hereditarily determined with the condition sometimes occurring in successive generations and sometimes skipping a generation. It is difficult to advise relative to the family in question. A check should be made of relatives. If no other occurrences are found the probability of its appearing in a child would appear to be low.

DENTAL CALCIUM DEPOSITS

To the Editor:—What can be done besides scaling for a female patient 17 years of age who deposits calcium on teeth so rapidly it must be removed about every two weeks? Blood calcium is 8.9 mg.

Charles H. Edel, M.D., Norwalk, Ohio.

ANSWER.—The approach to this problem is twofold. First, the patient should be given a thorough physical examination including urinalysis and blood studies to rule out possible systemic factors. The diet should be adjusted to include an abundance of alkaline ash and fibrous foods. Natural detergents such as fresh fruits should be prescribed. Frequent, small meals rather than widely spaced, heavy ones are suggested. The patient should be taught proper mechanical interference with the process which causes the hardening of the calculus. A stiff, natural bristle tooth brush can remove the organic matrix of the calculus while it is still in the soft state. It is necessary that the patient thoroughly clean the teeth once in every eight hour period. Thorough cleansing will prevent accumulation of calculus. Warm, normal saline mouthwashes may be used as an adjunct.

SPASTIC PARALYSIS

To the Editor:—What is the treatment of spastic paralysis? What solution is injected subcutaneously by some neurologists for the relief of spasm in this disease? Is tuberculin used for this purpose?

M.D., West Virginia.

ANSWER.—The treatment of spastic paralysis is varied. For the most part, it consists of reeducation through physical therapy, occupational therapy and exercises. Curare or one of the synthetic preparations similar to curare, such as "intocostin," has been used by subcutaneous injection to help to relax the hypertonicity of the muscles. This drug should not be used by anyone who is not fully familiar with its dangers. There is no evidence at all that tuberculin is of any value for this condition.

PENICILLIN DUST

To the Editor:—I have had so many inquiries regarding the penicillin dust treatment (home treatment) since articles have appeared in the daily papers that I should like to know whether such units are obtainable.

Libuse Bliss, M.D., Algonquin, Ill.

ANSWER.—The penicillin "dust" or "mist" treatment probably refers to aerosolized penicillin for the treatment of acute and chronic paranasal sinusitis and acute and chronic bronchopulmonary disease. Crystalline penicillin G can be dissolved in isotonic sodium chloride solution and placed in a nebulizer and sprayed into the nasal passages or into the bronchi and lungs. One hundred and fifty thousand to 1,000,000 units daily in divided doses have been used in acute and chronic infections. The penicillin is given this way every two or three hours. Various types of nebulizers have been employed. Penicillin is available in 50,000 unit tablets that can be inserted directly into the nebulizer. One-half to 1 cc. of sodium chloride solution is

then added, and, after the penicillin goes into solution, it can be nebulized. Crystalline penicillin tablets are provided by several manufacturers. The best review of the subject of penicillin aerosol therapy can be found in the article by Garthwaite, B.; Barach, A. L.; Levenson, E., and Rader, D., *Am. J. Med.* 3:261, 1947.

DIABETES INSIPIDUS

To the Editor:—A 30 year old white married woman has diabetes insipidus of six months' duration following normal delivery of a 10½ pound (4,763 Gm.) baby. In addition to intense thirst and passing 5 to 6 quarts of urine daily of specific gravity not over 1.004, she has obstinate constipation, frontal headaches of a fairly severe type and frequent recurring type, and amenorrhea of four months' duration. Physical examination, including neurologic, is essentially normal. The basic metabolic rate, blood cell count, sedimentation rate, phenolsulfonphthalein reaction and urine are otherwise normal; blood sugar, nonprotein nitrogen and roentgenogram of the skull were all normal. Please advise and give references regarding amenorrhea and severe headache.

Harry Parks, M.D., Atlanta, Ga.

ANSWER.—The exact cause of diabetes insipidus has not been determined, but it is certain that there is a deficiency or absence of some pituitary principle, most likely the antidiuretic principle of the posterior hypophysis. Experiments have shown that only those lesions of the hypothalamus which lead to atrophy of the posterior lobe result in diabetes insipidus. Confirmatory but not conclusive evidence of the role played by the posterior lobe in this disease is the clinical improvement observed after the use of posterior pituitary extracts, particularly the "pitressin" component. The amenorrhea cannot be explained on the basis of posterior lobe insufficiency. If, however, there is an associated hypofunction of the anterior lobe involving the gonadotrophic factors, this can cause amenorrhea. This patient may have a mild case of postpartum necrosis of the anterior pituitary, a condition well described by H. L. Sheehan and R. Murdoch (*J. Obst. & Gynaec. Brit. Emp.* 45: 456-489 [June] 1938). In nearly all of these cases, however, the women have postpartum hemorrhage and collapse at the time of labor. Two cases of diabetes insipidus in association with postpartum pituitary necrosis were reported by A. W. Spain (*J. Obst. & Gynaec. Brit. Emp.* 53:223 [June] 1946). In both these cases there was an extreme degree of polyuria, and at necropsy it was found that there was necrosis in both the anterior and posterior lobes of the pituitary body. Spain says that the recurrence of symptoms of diabetes insipidus in association with postpartum necrosis of the pituitary has not previously been commented on. Significantly in the experimental animal the polyuria following ablation of the posterior lobe is relieved by removal of the remainder of the gland. This suggests that some action of the anterior lobe hormones is necessary in the production of the diabetes insipidus syndrome. In Spain's 2 cases a small proportion of the anterior lobe cells survived.

Of course, the amenorrhea and the headaches may have nothing to do with the diabetes insipidus. There need be no concern about the amenorrhea per se, but the severe constipation and the headaches must be treated as well as the diabetes insipidus. The headaches may disappear after the use of posterior pituitary preparations.

SPONTANEOUS HEMOPNEUMOTHORAX

To the Editor:—The query on Spontaneous Hemopneumothorax in The Journal of June 26, 1948, Queries and Minor Notes, page 822, and its reply are quite interesting. As indicated in the reply, many cases of spontaneous hemopneumothorax are not reported. The question concerning "the statistical incidence of such an entity (spontaneous hemopneumothorax) compared to pneumothorax alone" is difficult to answer exactly. In a period of several years, we have observed 84 cases of benign idiopathic spontaneous pneumothorax (nontuberculous). In this group there were 5 cases of hemopneumothorax, or, roughly, 6 per cent.

The author of the reply states that "more than two thirds of the reported cases (spontaneous hemopneumothorax) have been complications of pulmonary tuberculosis." We believe that many cases reported as being tuberculous actually are not. In our personal series of 36 cases of tuberculous spontaneous pneumothorax, gross blood was not observed in the pleural cavity. In fact, the 5 cases of spontaneous hemopneumothorax that we have seen have all been of the benign idiopathic type (Benign Idiopathic Spontaneous Pneumothorax, *Am. J. M. S.* [April] 1948; Benign Idiopathic Spontaneous Pneumothorax and Tuberculous Spontaneous Pneumothorax, to be published).

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THE HEALTH DEPARTMENT AND THE FOOD OF THE PEOPLE

Chairman's Address

ROBERT H. RILEY, M.D.
Baltimore

It is difficult indeed adequately to express how deeply I appreciate the honor of presiding over this section. For many years, bearing various names and under the chairmanship of a long list of distinguished physicians, the annual meetings of this group have afforded a valuable opportunity for those engaged in the administration of official health agencies and those engaged in the practice of preventive medicine to meet together for a discussion of the problems which confront them both.

During the period of my connection with this section, the fields of preventive medicine and public health have moved forward so rapidly that only those of us whose service covers a period of more than one or two decades can recognize how far we have come. Every field of human knowledge, with the possible exception of mathematics, has made more scientific and technologic progress in the last few decades than during the whole of previous history, and public health and preventive medicine have contributed more than their full share in this development. This new knowledge has resulted in profound alterations in the way of life of the human being, and the contribution of preventive medicine to these changes has been most important of all.

It is my purpose at this time, however, to discuss developments in only one small sector of the whole field of public health, that of human nutrition. In that field I shall try to review the changes which have already occurred and to look forward to the problems with which the future is pregnant, so far as they can now be foreseen.

The changes in human food habits during the last three decades have been so rapid, so profound and so powerful in their actual and potential effect on the well-being of the race that they should be far better understood than is now the case. Some of us here can, for example, remember when the food supply of the nation was in large part produced within a few miles of the place of its consumption. Some have, in fact, loaded a sack of corn on the back of a horse or mule and ridden with it to the grist mill and then watched

the grain poured into the hopper and in a moment seen the meal running smoothly back into the sack from which the corn had just been poured. I can remember when the fruits and vegetables on sale even in the larger cities were almost all produced on nearby farms. They were brought to the markets of the city and there sold to the consumer by the farmers who had themselves grown and harvested them. Tropical fruits were a great luxury, available, except to the very rich, only on very special occasions.

The supply of milk was from varied sources and was wholly unregulated. Many families in the cities kept one or two cows for their own supply and sold the surplus to their neighbors over the back fence. These one-cow dealers, as they were called, were a problem of serious moment in the early campaigns of milk sanitation. For the rest, the public supply of milk was in great part produced in small dairies located within the city itself, or in the nearby suburbs, and sold by the producer from his own wagon as he made the daily rounds of his customers. Meat was also a local product, from animals killed in slaughter houses within the community and sold as soon as possible after slaughter.

A few foods had of course always come from distant sources; sugar, molasses, spices and condiments were articles of ocean commerce for centuries. The opening of the West moved the center of the nation's grain supply and of milling to west of the Mississippi. The preservation of fruits and vegetables by heating and sealing has a long history. The first experiments were made in France during the Napoleonic Wars, and actual industrial canning began in the United States in 1819. It was the perfection of this process that really began the revolution in food habits.

But with these exceptions, the mass of the food of our fathers and grandfathers was produced close to the place of its consumption and was subjected to the simplest and most necessary processing only.

We can, it is true, remember those early days without nostalgic longing for their return. The vegetables produced on nearby farms were not always of good quality and except for cabbage and turnips were available only for a brief season each year. The milk was dirty, of poor keeping quality and not infrequently dangerous. The meat was tough and stringy, and even its relative cheapness was not adequate consolation for its poor quality. Fruits were limited in amount and were, except for apples, available only for a short period each year. To those who lived in those parts of the country where cornbread was a staple diet, it is only the corn meal of the old days the disappearance of which is to be regretted.

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About the time when Benjamin Harrison became President of the United States, the tremendous increase in the population of the cities began to produce changes in the production and distribution of the food supplies of the nation. The invention of roller mills had made possible the production of flour of more agreeable appearance than was possible under older methods, and this flour rapidly drove from the market the product of the smaller local mills.

Similarly, the production of range cattle in the far West resulted in the establishment of great centers for the slaughter of cattle and in the development of methods for the shipment of meat and meat products to distant consumers. When "western beef," as it was called, was first introduced in the markets of the eastern cities, it was regarded with considerable disfavor. Consumers imagined that they could taste the preservatives which they wrongly believed had been used to make its shipment possible. In the beginning only its lower price commended it to the public.

The crowding of the cities made it impossible to continue to produce an adequate amount of milk within or near the city limits, and technologic methods were devised for shipping milk long distances. Successfully to manage this business required the creation of large corporations and the development of depots for collecting milk in rural areas and for distributing it in the cities. The use of refrigerated cars for the shipment of meat led quickly to the shipment of citrus fruits and vegetables in the same way. It was soon found profitable to raise each fruit or vegetable in that part of the country where climate and soil were most favorable to its production, and although market gardens near the cities have never quite disappeared, the great bulk of fruit and vegetable production was moved to areas far distant from the places of maximum consumption.

These changes were the inevitable result of the advances in horticulture, in food technology and in transportation, and without them the development of our present civilization could not have taken place. They brought, however, certain dangers to the health of the people, which made necessary the development of systems of protection of equal complexity. The most pressing were, of course, those connected with the production and distribution of milk. It was not difficult for the large corporations which engaged in the business of collecting and distributing milk to produce a product far cleaner and of better keeping quality than that coming from the neighborhood dairies of the past. However, the mingling of milk coming from many cows and its distribution by the larger companies to thousands or even hundreds of thousands of persons brought dangers which had previously not existed. The occasional infection of these large supplies of milk and milk products gave rise from time to time to epidemics involving thousands of cases of typhoid, scarlet fever and septic sore throat. The shipment of meat and of certain other products led to the use of preservatives, not all of which were entirely innocuous. The great commercial orchards and truck farms began to use insecticides in large quantities, and some of these were highly toxic and at least potentially dangerous to the health of those habitually using products in the growth of which these poisons had been employed.

The health departments of the nation reacted promptly and, in general, effectively to the challenge of these new conditions. The almost complete control

of bovine tuberculosis, the inspection of all establishments where milk and its products were produced, distributed or sold and the enactment of ordinances requiring pasteurization of public milk supplies soon resulted in so safeguarding most of the nation's supply of milk that the dangers of wide distribution were almost completely controlled. The improved safety and quality resulted in a large increase in the consumption of milk, and a most significant contribution was thus made to the public health.

It was indeed fortunate that the federal government entered the field of food control soon after the beginning of this period of great change. Its first activities were in connection with meat inspection. Foreign countries threatened to interdict the shipment to them of American meat products, because of the fact that a large proportion of the pork shipped abroad at that time was found to be trichinous. It had not been deemed necessary to inspect pork products in the United States, since it was the habit in America to cook pork long enough to insure the destruction of trichinae. To meet this situation, the federal government established a system of inspection for meat slaughtered in the larger abattoirs of the country and destined for shipment overseas. It was not long before this inspection was extended to meat shipped interstate in the United States.

In the very first years of the twentieth century, Dr. Harvey W. Wiley, then the Chief of the Bureau of Chemistry of the United States Department of Agriculture, interested himself in the question of the adulteration of foods shipped in interstate commerce. Although Dr. Wiley was a man of extraordinary energy and courage, it was only after many years of effort that he succeeded in securing the passage of the Federal Food and Drug Act of 1906. The conditions which this act was designed to correct were not for the most part tremendously important by modern standards, but it was an exceedingly fortunate thing that the act itself was passed and that standards of purity and freedom from deleterious substances of our food supply were established and enforced by the federal government.

The passage of the federal act was followed, as is so often the case, by parallel legislation on the part of the states. Many of the state laws passed at this time, however, placed the enforcement of the whole system of food control in the hands of the department of agriculture rather than that of health. This fact, together with the long failure of the older city departments of health to develop adequate and effective systems of food inspection, gave food sanitation so low a position in the minds of the public health profession that it has even now not received the recognition it deserves. The demonstration about this same time of the tremendous importance of the accessory food factors in the nutrition of human beings and domestic animals and the widespread popularization of the facts have tended still more to obscure the importance of continuous, complete and effective control of all those foodstuffs which are processed in any way before reaching the ultimate consumer.

There is certainly no need in this company to review the arguments for an improvement in the diet of our people. The new knowledge of the importance of vitamins and of certain mineral substances to health and physical vigor is now known to all intelligent persons in every civilized country. The task remaining is to apply this knowledge to those who have not yet

been reached by the flood of propaganda on the subject which has been poured forth in recent years. The success of the British government in maintaining the health of its whole people and in actually improving the physical status of its children during the late war, in the face of serious shortages of many foods, is proof positive of the need for the better utilization of the abundant food supplies of this country and in particular of the enormous importance of insuring to every expectant mother and every growing child a diet which in amount and content will make possible the fullest and most healthful development. This is the unfinished task in nutrition.

There are still, however, unfinished tasks in connection with the safety and sanitary quality of our food supply. The war waged by our growers of foods of all sorts on their insect enemies is never won, and it will probably continue as long as there are both human beings and insects on this little planet. Modern transportation is being utilized as well by the insect as by the human population of the earth, and new pests are constantly appearing in areas where they had not before been known. In this war, new weapons are constantly being developed and the old weapons are used in steadily increasing amounts. It was not very many years ago that arsenic began to be used as a spray for apples. The danger that the average citizen would receive a toxic amount of arsenic was not at first sufficiently serious to give rise to much concern. Since this early beginning, however, it has proved necessary to use arsenic in the commercial production of one after another of our fruits and vegetables, and the danger to the consumer is thus constantly increasing. It seems probable that insecticides free from toxicity to human beings will in time replace the present dangerous substances. It will always be necessary, however, for the health department to protect the interests of the individual consumer who has no means of knowing the danger to which he is subjected and is always poorly represented when any question of legislation is under consideration.

When the replacement of the original Federal Food and Drugs Act by what is now called the Federal Food, Drug and Cosmetic Act was pending before the Congress of the United States, the interests of the public were presented to the committee by the representative of the Federal Food and Drug Administration, whose motives were plainly suspect of the committee, and by the three physicians who were called "the three professors," who appeared voluntarily as witnesses in behalf of the bill. In opposition were several hundred lawyers, lobbyists and technicians of the various food-producing and processing interests involved. Each one of these paid lobbyists was fully aware of the effect of the bill on the interests of his own client and was prepared to expend all the time, energy and money necessary to protect those interests. No administrative health officer appeared at these hearings.

What has been said about insecticides applies equally to a wide variety of other chemical substances which have been developed and which are now being used in the processing of food on a commercial scale. Until Mellanby's demonstration of the fact that flour treated with nitrogen trichloride, the so-called "agene," produced hysteria in dogs, few if any even of our best informed health officers were aware of the fact that a large proportion of all flour now sold on the American market is treated with this powerful chemical agent.

There is as yet, of course, no evidence that the "agenizing" of flour has produced any ill effects on our human population, but Mellanby's observations have been confirmed and extended in this country, and no one as yet knows the effect on human beings of the prolonged and regular use of "agenized" flour, or whether or not there will be remote and serious results from its occasional use by so large a part of the population.

"Agene" is very much in the limelight at the moment, but it is by no means the only substance used in this country in the processing of flour. Chlorine, nitrosyl chloride, benzoyl peroxide and the oxides of nitrogen are all used for bleaching flour and for additional aging effect. Potassium bromate is used as a conditioner, to make the flour easier to handle and to produce loaves of greater volume than is possible without the addition of this agent. Sodium bicarbonate, calcium phosphate and sodium acid pyrophosphate are also added to certain flours to produce one or another effect.

In the processing of evaporated milk, disodium phosphate, sodium citrate and calcium chloride are used as stabilizers. In the making of cream cheeses, gum karaya, gum tragacanth, carob bean gum, gelatin and algin are used to prevent the leakage of moisture from the product. In the making of preserves, jams and jellies, lactic, malic and tartaric acids are used to increase the acidity of the product and sodium citrate and potassium tartrate are used as buffer salts to prevent its too rapid jelling. This list of products now regularly in such use could be extended to great length, and, in addition, a large number of new products are now being used experimentally. It should be made clear that up to this time there is no evidence that any of these substances is known unfavorably to affect the health of consumers of the product. The Food and Drug Administration has actively interested itself in the subject and has formulated stringent regulations for controlling the use of all such substances.

Surely it would seem that this situation should be a source of concern to every state and local health officer in this country and that the efforts of the federal government to control it should be aided and encouraged in every possible way. When it is proposed to use a new substance of this kind, the representatives of the food industry are at once mobilized and every possible scrap of evidence in favor of the use of the product is assembled and presented to the official agency. The millions of consumers whose health is placed in possible danger have no knowledge of the fact that their interests are in jeopardy and no means by which these interests can be represented. This important field deserves far more attention at the hands of all health officers than it has up to now received.

The nation's food is more than ever, therefore, the concern and responsibility of our health officials. Its control has passed far beyond the condemning of spoiled meats, fruits and vegetables and making perfunctory inspections of restaurants. These classic functions must, of course, continue to be performed and should be done as well as our existing facilities make possible. There is, however, another and higher duty which we must recognize and another responsibility we must assume, and that is to make sure that in the enormous business of producing, processing and distributing the food supply of our great population, the interest of the consumer and particularly the health of the consumer must always come before the convenience or the profit of those who supply it.

METHODS OF PROTECTION AGAINST HOMOLOGOUS SERUM HEPATITIS

I. Studies on the Protective Value of Gamma Globulin in Homologous Serum Hepatitis SH Virus

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Antigenic differences between certain strains of infectious (epidemic) hepatitis virus (IH) of relatively short incubation (about eighteen to forty days) and certain strains of serum hepatitis virus (SH) of relatively long incubation (about sixty to one hundred and fifty days)¹ have been conclusively demonstrated. The data of Oliphant,² suggesting immunologic similarities in such viruses, could well be explained by the facts that: (1) the virus, designated by Oliphant as that of epidemic hepatitis, had a long incubation period (about seventy-five days), (2) thus, it actually may have been a strain of serum hepatitis virus, SH, rather than one of epidemic hepatitis, IH, and (3) a cross immunity with his designated serum hepatitis virus, SH, therefore would not have been surprising.

The confusion concerning the origin of such strains of hepatitis virus can best be clarified by study of their immunologic behavior in experimental subjects. It thus would appear important from the viewpoint of experimental studies that virus agents in infective materials should be only tentatively designated by the term "infectious hepatitis" (IH) or "serum hepatitis" (SH) until the immunologic and other properties of the agent concerned have been demonstrated. When these properties are not known, reference to the disease as "viral hepatitis" might avoid the classification of a virus as one of "infectious hepatitis" (IH), when later it may prove to be one of the strains of "serum hepatitis virus" (SH). The existence of such confusion is evident from the experimentally demonstrated presence of both strains of virus in the blood, although the serum hepatitis virus (SH) has not been obtained from the commonly infective source of the infectious (epidemic) hepatitis virus (IH); i. e., the stool. The data of the present report, although not adding conclusive evidence for or against the antigenic differences already demonstrated, have pointed to an interesting difference between them in respect to the protective effect of gamma globulin.

These data have indicated not only a differing effect on serum hepatitis SH with different batches of gamma globulin, but also an interesting phenomenon in the field of viral diseases, namely, an apparent prolongation of the incubation period of serum hepatitis SH by the parenteral injection of certain batches of gamma globu-

lin, 10 cc., during this period. In contrast, in the studies to date on infectious (epidemic) hepatitis IH, such prolongation apparently has not been observed.

GAMMA GLOBULIN IN INFECTIOUS (EPIDEMIC) HEPATITIS (IH VIRUS)

The use of gamma globulin obtained from large pools of American Red Cross blood by means of the fractionation method developed by Cohn and his co-workers in the prevention of hepatitis IH has been previously described.³ In four epidemics of hepatitis IH in widely separated areas, gamma globulin in amounts of approximately 0.06 to 0.15 cc. per pound of body weight was effective in protecting a large proportion of exposed susceptible persons. In the first epidemic in which gamma globulin was used prophylactically, attenuation of the disease was observed in a number of persons who were not completely protected.^{3a} In these persons and in the few in whom unmodified hepatitis developed, despite previous injection of gamma globulin, no prolongation of the incubation period was apparent, although the evidence on this point was inconclusive because of the uncertainty of the exact time of exposure. However, if prolongation of the incubation period had occurred, a number of cases of hepatitis should have been noted in the treated group more than one week after the injection of the globulin. The paucity of such cases suggests that in this disease the globulin usually either prevented or attenuated the disease, without apparent prolongation of the incubation period.

Confirmatory evidence for such protection and attenuation, together with absence of prolongation of the incubation period, was obtained by Paul and Havens in a similar study.⁴ In this study also, the lack of cases occurring more than ten days after the injection of the globulin apparently indicated that the incubation period had not been lengthened by the parenteral injection of the globulin.

In the two epidemics of hepatitis IH in the Mediterranean Theater of Operations in which gamma globulin was used prophylactically, it was not possible to obtain data relative to attenuation of hepatitis or to prolongation of the incubation period.^{3b}

GAMMA GLOBULIN IN HEPATITIS SH

Field Studies.—The study of the effect of prophylactic gamma globulin on hepatitis SH (long incubation period) has been hampered by the lack of clearcut epidemics of the disease. The groups studied to date have been composed entirely of battle casualties who had received transfusions of blood or plasma in the various theaters of operation and then had been evacuated to general hospitals in the Zone of the Interior. That the hepatitis which occurred in these groups was, in almost all instances, hepatitis SH was indicated by the fact that in other battle casualties in the same hospitals who had not received blood products hepatitis rarely developed, and the incubation period apparently in all cases was more than sixty days. Studies have been reported in two different groups of such battle casualties in two widely separated United States Army general

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These investigations were conducted in part under the Commissions on Measles and Mumps, on Virus and Rickettsial Diseases, and on Liver Disease, Army Epidemiological Board, Preventive Medicine Service, Office of the Surgeon General, United States Army.

1. Neefe, J. R.; Stokes, J. R., Jr., and Gellis, S. S.: Hepatitis and Infectious (Epidemic) Hepatitis: Immunity and Cross-Immunity in Volunteers. *Am. J. M. Sc.* **210**: 561, 1945. Neefe, J. R., and Stokes, J. R., Jr.: Homologous Serum Hepatitis and Infectious (Epidemic) Hepatitis: Studies in Volunteers Bearing on Immunological and Other Characteristics of the Etiological Agents. *Am. J. Med.* **1**: 3 (July) 1946.

2. Oliphant, J. W.: Infectious Hepatitis: Experimental Study of Immunity. *Pub. Health Rep.* **59**: 1614, 1944.

3. (a) Stokes, J. R., Jr., and Neefe, J. R.: The Prevention and Attenuation of Infectious Hepatitis by Gamma Globulin. *J. A. M. A.* **127**: 144 (Jan. 20) 1945. (b) Gellis, S. S.; Stokes, J. R., Jr.; Brother, G. M.; Hall, W. M.; Gilmore, H. R.; Beyer, E., and Morrissey, R. A.: The Use of Human Immune Serum Globulin (Gamma Globulin) in Infectious (Epidemic) Hepatitis in the Mediterranean Theatre of Operations: I. Studies on Prophylaxis in Two Epidemics of Infectious Hepatitis. *J. A. M. A.* **128**: 1062 (Aug. 18) 1945.

4. Havens, W. P., Jr., and Paul, J. R.: Prevention of Infectious Hepatitis with Gamma Globulin. *J. A. M. A.* **129**: 270 (Sept. 23) 1945.

hospitals.⁵ In the first hospital, two doses of gamma globulin of 10 cc. each were injected at an interval of thirty days in alternate battle casualties who had received blood or plasma following injury. That the test and control groups were chosen by chance is indicated by the closely similar distribution of the battle casualties from the Mediterranean, European and Pacific theaters of operation in these two groups. In this controlled study excellent protection apparently was afforded against the hepatitis SH virus by the gamma globulin. However, in the second study, at the other hospital, in which a single dose of gamma globulin, 10 cc., was used, there was no significant difference in incidence of hepatitis SH noted between the test and control groups. Despite the lack of complete protection, the group data indicated that the single injection of gamma globulin had resulted in a prolongation of the mean incubation period. While the mean length of time between transfusion and injection of globulin in the test group was almost identical

ever, carefully collected data permitted a comparison between the mean incubation period of cases of hepatitis which preceded the routine use of globulin and the mean incubation period of cases which occurred after the routine single injections of gamma globulin were started. As the control period preceding the routine

TABLE 2.—Effect of Gamma Globulin on Hepatitis Virus SH (Experimentally Induced Hepatitis): Study No. 1

Material Injected	Number of Volunteers	Results		Incubation (Days)
		Hepatitis With Jaundice	Hepatitis Without Jaundice	
2 cc. infective plasma.....	4	2	0	101; 112
Mixture; 2 cc. infective plasma, 1 cc. gamma globulin	5	2	1	105; 117; 136
2 cc. infective plasma, 10 cc. gamma globulin simultaneously at separate sites	5	1	1	105; 112

TABLE 1.—Tabulation of Data from McGuire General Hospital*

Interval † in Two Week Periods	Number of Patients Given Globulin	Number of Patients Not Given Globulin
0.....	..	..
2.....	..	..
4.....	1	4
6.....	1	7
8.....	2	8
10.....	4	5
12.....	4	4
14.....	4	3
16.....	3	..
18.....	3	..
20.....	3	..
22.....	3	..
24.....	4	..
26 and over.....	12	2
Total.....	43	33

* These data were furnished by Major William A. Jeffers, Medical Corps, Army of the United States, and Major Philip E. Sartwell, Medical Corps, Army of the United States.

† Intervals from transfusion to onset of hepatitis in 76 patients who had previously received transfusions and who subsequently had hepatitis. The mean interval for patients given globulin was one hundred and sixty-one days and the mean interval for patients not given globulin eighty-eight days.

with the mean length of time between transfusion and the day of designation as a control in the other (control) group, the succeeding mean intervals to the onset of hepatitis were different. In the test group the interval (fifty-two days) was over 50 per cent longer than the comparable interval (thirty-four days) in the controls. As the possibility was approximately 1 in 400 that such a prolongation was purely the result of chance, the observations suggest the presence of a virus-inhibiting factor in the batch of gamma globulin used, in spite of its lack of effect on the incidence of the disease.

As a result of the protective effect indicated by the decrease incidence of hepatitis SH in those given injections at the first hospital, all Army general hospitals in this country were directed to administer routinely, on admission, a single intramuscular injection of gamma globulin to all newly evacuated battle casualties that had received transfusions. For this reason, further comparative studies with casualties (not given injections) as controls were not possible. In one hospital, how-

use of gamma globulin was approximately five months in duration, whereas the study period following institution of the routine use of globulin was approximately seven months, the time intervals are not comparable. However, the case rate of hepatitis in battle casualties that had received transfusions in this hospital remained approximately the same throughout this twelve month period.⁶ Thus, the occurrence of 33 cases of hepatitis in the control group and of 43 cases in the group given injections within the five and seven month periods, respectively, would approximate the expected number if there were no decided change in the case rate. This suggested that the single dose of globulin, 10 cc., had not decreased the incidence of hepatitis SH. That 3 deaths occurred in the 33 control casualties, whereas no deaths occurred in the groups given injections, is of interest, although not statistically significant. Although ineffective in decreasing the incidence, a highly significant difference was observed between the mean incubation period (eighty-eight days) in casualties not treated with gamma globulin and the mean incubation period (one hundred and sixty-one days) in the casualties treated with gamma globulin. These data are presented in table 1. As in the second

TABLE 3.—Effect of Gamma Globulin on Hepatitis Virus SH (Experimentally Induced Hepatitis): Study No. 2

Material Injected	Number of Volunteers	Pre-sumptive Cases	Hepatitis Without Jaundice	Incubation (Days)
3 cc. infective plasma.....	7	2	2	63; 94; 70; 73
Mixture; 3 cc. infective plasma, 10 cc. gamma globulin	7	2	1	80; 98; 73
3 cc. infective plasma, followed by 10 cc. gamma globulin after 1, 2 and 3 mo.	7	0	0	.....

hospital previously mentioned, the observations in this third hospital also strongly suggested some inhibitory effect of the batch of globulin used on the virus of hepatitis SH.

5. Grossman, E. B.; Stewart, S. G., and Stokes, J., Jr.: Post Transfusion Hepatitis in Battle Casualties, J. A. M. A. 129: 991 (Dec. 8) 1945. Duncan, G.; Christian, H. A.; Stokes, J., Jr.; Rexer, W. F.; Nicholson, J. T., and Edgar, A.: An Evaluation of Immune Serum Globulin as a Prophylactic Agent Against Homologous Serum Hepatitis, Am. J. Med. Sc. 213: 53 (Jan.) 1947.

6. Personal communication to the authors from Major William A. Jeffers, Medical Corps, Army of the United States, Chief of Medical Service, McGuire General Hospital, Richmond, Va. The incubation periods were calculated from the date of injury, although plasma or blood, injected also on subsequent dates, might have been responsible for the hepatitis. Such errors should have occurred with approximately equal frequency in the control and treated groups and, thus, would not alter essentially the evidence obtained of decided differences between the groups.

GAMMA GLOBULIN IN EXPERIMENTALLY INDUCED HEPATITIS SH

Studies were carried out to determine the possible protective effect of gamma globulin against the hepatitis virus SH^{1, 2} in volunteers.

In the first study, 5 volunteers each received parenteral injections of a mixture composed of 2 cc. of icterogenic plasma (virus SH) and 1 cc. of human immune serum (gamma) globulin. In 3 of these volunteers hepatitis developed, in 2 with jaundice and in 1 without jaundice. Five other volunteers simultaneously received, at separate sites of injection, 2 cc. of the icterogenic plasma and 10 cc. of the gamma globulin preparation. In 2 of these volunteers hepatitis

TABLE 4.—Effect of Gamma Globulin on Hepatitis Virus SH (Experimentally Induced Hepatitis): Study No. 3

Material Infected	Number of Volunteers	Results			Incubation (Days)
		Hepatitis With Jaundice	Hepatitis Without Jaundice	Questionable Hepatitis	
1 cc. Infective serum.....	7	1	1	2	66; 66; 102; 72
Mixture: 1 cc. Infective serum, 20 cc. gamma globulin	7	2	1	0	65; 109; 73
1 cc. Infective serum followed by gamma globulin, 0.06 cc. per pound of body weight after 1, 2 and 3 mo.	7	2	1	1	82; 70; 68; 88

developed, in 1 with jaundice and in 1 without jaundice. Of 4 control volunteers who received parenterally the icterogenic plasma alone, in 2 hepatitis with jaundice developed. The results are summarized in table 2. No significant differences in the lengths of the incubation periods were observed in the cases in these different groups, the interval between injection and the onset of hepatitis being three to three and a half months in all.

evidence of hepatitis. Seven volunteers served as controls. Each received intramuscularly 3 cc. of icterogenic plasma. In 2 of these volunteers mild hepatitis developed without jaundice, and 2 had questionable hepatitis. The results are summarized in table 3. Since only mild hepatitis without jaundice was produced in the group of controls, it seemed probable that the viral agent had become attenuated. Therefore, the apparent protection afforded by three 10 cc. doses of gamma globulin against this attenuated agent must be regarded as inconclusive. On the other hand, the preparation of gamma globulin used failed to neutralize the attenuated viral agent. This is indicated by a similar incidence and similar incubation period of mild hepatitis in the group receiving the neutralization mixture and in the group of controls.

The third study was similar to the second. The same strain of hepatitis virus SH was used, but the material represented the second human passage virus SH (Fort Bragg strain). Seven volunteers were each given intramuscular injections of a mixture composed of 1 cc. of icterogenic serum and 20 cc. of gamma globulin. In 2 of the volunteers hepatitis developed with jaundice, and in 1 hepatitis developed without jaundice. Seven other volunteers simultaneously received by intramuscular injection 1 cc. of the icterogenic serum, followed by an injection of gamma globulin, 0.06 cc. per pound of body weight, after one, two and three months, respectively. In 2 of the volunteers hepatitis with jaundice developed; 1 had hepatitis without jaundice, and 1 had questionable hepatitis. Seven volunteers served as controls. Each received intramuscularly 1 cc. of icterogenic serum. In 1 of the volunteers hepatitis developed with jaundice; 1 had hepatitis without jaundice, and 2 had questionable hepatitis. The results are summarized in table 4. Gamma globulin afforded no protection either when mixed with virus SH previous to injection or in

TABLE 5.—Effect of Convalescent Plasma on Hepatitis Virus SH

Group	Material and Amount	Number Inoculated	Results			Incubation (Days)
			Hepatitis With Jaundice	Hepatitis Without Jaundice	Percentage of Hepatitis	
Test.....	Mixture: 2 cc. infective serum, 10 cc. convalescent plasma followed by 20 cc. convalescent plasma after 1, 2 and 3 mo.	4	1	0	25	93
Control.....	10 cc. convalescent plasma	4	0	0	0.0	..

The clinical study in one of the United States Army general hospitals already mentioned indicated a significant decrease in the incidence of hepatitis SH among the group of battle casualties receiving two doses of gamma globulin of 10 cc. each at an interval of thirty days. The second and third studies were carried out to ascertain the value of three prophylactic doses of gamma globulin against hepatitis virus SH and to study further the neutralizing effect of gamma globulin on this virus.

In the second study, 7 volunteers were each given intramuscular injections of a mixture composed of 3 cc. of icterogenic plasma and 10 cc. of gamma globulin. In 1 of these volunteers mild hepatitis developed without jaundice, and 2 had questionable hepatitis. Each of 7 other volunteers simultaneously received by injection 3 cc. of icterogenic plasma, followed by 10 cc. of gamma globulin after one, two and three months, respectively. None of these volunteers showed any

mild hepatitis. The results are summarized in table 3. No significant differences in the length of the incubation period was observed in these different groups.

CONVALESCENT PLASMA IN EXPERIMENTALLY INDUCED HEPATITIS SH

Study No. 4.—A study was carried out of the possible protective effect of hepatitis convalescent plasma against hepatitis virus SH. The same icterogenic serum (Fort Bragg virus, second passage) used in the last gamma globulin study was employed. The convalescent plasma was obtained from a single case of hepatitis SH with jaundice two and one-half months after recovery.

Four volunteers were each given intramuscular injections of a mixture composed of 2 cc. of icterogenic serum and 10 cc. of convalescent plasma, followed by 20 cc. of convalescent plasma after one, two and three months, respectively. In 1 of the volunteers hepatitis

with jaundice developed. In order to determine whether or not the convalescent plasma contained hepatitis virus SH, 4 volunteers were given parenteral injections of the convalescent plasma alone. None showed evidence of hepatitis. The results are summarized in table 5. In this study, which was too limited for conclusive evidence, convalescent plasma from a single person apparently failed to protect against hepatitis virus SH, suggesting that neutralizing antibodies were either absent or not present in sufficient concentration to afford protection.

COMMENT

The significance of the aforementioned observations may be reviewed in the light of the following considerations:

1. *The Possible Inhibiting Effect of Gamma Globulin on Different Strains of Hepatitis Virus.*—There can be little question that various batches of gamma globulin prepared from pools of plasma from two to three thousand donors, collected during World War II by the American Red Cross, have had a decidedly inhibiting effect on the virus of the infectious (epidemic) hepatitis IH, in view of the protective results obtained in the four widely separated epidemics mentioned. Although no direct neutralization studies utilizing the globulin and strains of this virus have been carried out, it appears highly probable that the resistance of the human host results from the passive transfer of protective antibodies in the gamma globulin. Despite the lack of measurement of such antibodies, it also appears probable, inasmuch as various batches of globulin have been effective, that a fairly uniform titer of such antibodies has been present. Such uniformity would be entirely similar to the fairly uniform titers in gamma globulin of other virus antibodies, such as those of human influenza viruses A and B and of swine influenza virus. If present, such general uniformity could accord with a wide prevalence of infectious hepatitis IH in an apparent (clinical) or in an inapparent (subclinical) form. The epidemiologic studies of this disease, particularly as related to the frequency of the virus in the stools, could well explain its wide prevalence in the general population in the apparent or inapparent forms, with a resulting antibody production.

The field observations on serum hepatitis SH have included studies in three widely separated general hospitals in which large amounts and different batches of gamma globulin were used. In all three studies, the gamma globulin appeared to have an inhibiting effect on the virus. The effect was protective, however, only in the study in which two doses of 10 cc. each were used.

In the studies on volunteers, it is possible that the strain of virus was different from that (or those) encountered in the battle casualties. Differences in the quantity or composition of the gamma globulin preparations also may account for the lack of protection, since it is possible that hepatitis virus SH is not as widespread as virus IH or does not produce sufficient neutralizing antibodies to be protective even when concentrated. The fractionation process or storage of gamma globulin may have diminished or destroyed antibodies present in the original plasma, although in all batches used satisfactory titers of antibodies against influenza A and B viruses were observed. (For influ-

enza A virus, the PR 8 strain was used; for influenza B virus, the Lee strain was used.)

In the study with volunteers in which a neutralization test was carried out with hepatitis SH convalescent plasma, and multiple prophylactic doses of convalescent plasma were subsequently injected, virus-neutralizing antibodies could not be demonstrated. This convalescent plasma was taken from one patient having hepatitis with jaundice as a result of inoculation with the same strain of hepatitis virus SH used in this study. Because of the small size of the group, no conclusions can be drawn.

Despite the many problems which remain unanswered, these studies seem to afford some additional evidence for antigenic differences between hepatitis viruses SH (Fort Bragg strain) and the epidemic IH strains previously studied. The final solution of this problem and the evaluation of the role of gamma globulin in the prophylaxis of serum hepatitis obviously will require further studies in volunteers or, should they become available, in susceptible animals.

As little is known of the epidemiologic aspects of serum virus SH hepatitis, which may possibly be different from that of infectious (epidemic) hepatitis, a hypothetical discussion concerning the incidence of apparent or inapparent cases is not appropriate. Certain evidence suggests that human carrier states may exist wherein the virus of serum hepatitis is present either continuously or from time to time in the blood stream, in such form as to infect recipients of whole blood or plasma from donors who may act as "carriers." In what manner gamma globulin from large pools of plasma could acquire virus-inhibiting properties against such a virus agent is highly speculative and beyond the scope of this discussion.

2. *The Possible Presence of Active Serum Hepatitis Virus in Gamma Globulin.*—The question arose as to whether the recorded delay in the incubation period of serum hepatitis in the hospitals studied did not result from the presence of the active serum hepatitis virus in the injected gamma globulin. If present and active, this could have caused a later increase of serum hepatitis in the groups given injections and, in the case of the last hospital, could partly have accounted for the exceptional length of the mean incubation period in the group given injections. That the presence of active virus in the gamma globulin would not explain the recorded observations appears clear for the following reasons: (a) At the first hospital, the two doses of globulin, given one month apart, apparently afforded a high degree of protection, and cases of hepatitis in the test group did not continue to appear, as should have been the case if the gamma globulin had been infective. (b) At the second hospital, the incidences of hepatitis in the test and control groups, chosen alternately, were not significantly different. The test group should have shown a significantly higher incidence of hepatitis, rather than merely a prolonged mean incubation period, if the gamma globulin itself had been infective. (c) At the third hospital, although it lacked the alternation of choice of test and control groups, the similar incidence of hepatitis both preceding and following the use of gamma globulin indicated that the globulin itself had not been infective. (d) Finally, serum hepatitis has not been observed in children given injections of gamma globulin for prophylaxis against other diseases. In studies on measles, approxi-

mately 3,000 children thus treated have been followed up carefully, with complete absence of any evidence that active serum hepatitis virus was present in the gamma globulin used. The absence of hepatitis in so large a number of the susceptible subjects (children) that received injections appears highly significant.⁷

Enders⁸ has observed that when mouse encephalomyelitis virus (Theiler's virus) and tobacco mosaic virus were added to pools of plasma in which no antibodies to these viruses were present, the gamma globulin fractions, as well as all other fractions of the plasma obtained by the method of Cohn and his co-workers, still contained the active viruses. The strains of virus of serum hepatitis thus far studied appear to be comparatively resistant to heat and to other treatment, so that the process of fractionation presumably should not inactivate them if they behaved in a manner at all similar to that of the other two viruses mentioned. The apparent absence of active serum hepatitis virus from the gamma globulin fractions thus far studied may result from inhibiting or neutralizing factors present at times in the large pools of plasma of the American Red Cross, from which the gamma globulin used in these studies was derived. It is also possible that the concentration of such inhibiting or neutralizing factors in the gamma globulin may add to both the safety and effectiveness of such materials. It seems possible that a few persons with extremely high titers of antibodies to the virus of serum hepatitis may furnish a protective titer for the entire pool and, in particular, for certain batches of the gamma globulin derived from such pools.

However, cases of hepatitis reported to the American Red Cross⁹ among persons receiving fraction I (fibrinogen and antihemophilic globulins) indicate the frequent presence of virus SH in this fraction. Its apparent absence from the gamma globulin of fractions II and III and the absence of virus SH antibodies from many batches studied of these same fractions necessitate consideration of the following possibilities.

1. The virus SH may differ from the animal and plant viruses studied by Enders⁸ in its distribution among the fractions and may be concentrated in fraction I, possibly as the result of affinity for certain proteins.

2. The virus SH may form complexes with proteins in fractions II and III, which are filtered out or lost during processing.

3. The virus SH may be inactivated under the conditions of storage and handling of gamma globulin which have been more rigorous than those employed for fraction I.

The dilution factor discussed by Andrewes¹⁰ in its possible relation to the occurrence of serum hepatitis cannot as yet be fully evaluated. It is thus clear that many of the problems here discussed concerning the epidemiologic study and control of serum hepatitis require additional basic data before conclusive answers to them can be found.

7. Three cases of supposedly long incubation hepatitis following gamma globulin therapy have been mentioned personally to the authors. All of these could possibly have been chance infections with the IH virus. The paucity of such occurrences, when compared with the relatively high incidence (5 to 7 per cent) following treatment with pooled plasma from which the gamma globulin was prepared, strongly suggests that the gamma globulin was not in itself responsible for such hepatitis.

8. Cited by Gellis, S. S.; Neefe, J. R.; Stores, J., Jr.; Janeway, C. A., and Seatchard, G.: Chemical, Clinical, and Immunological Studies on the Products of Human Plasma Fractionation XXXVI: Inactivation of the Virus of Homologous Serum Hepatitis in Solutions of Normal Human Serum Albumin by Means of Heat, *J. Clin. Investigation* 27: 239 (March) 1948.

9. Janeway, C. A.: Personal communication to the authors.

10. Andrewes, C. H.: Jaundice and the Dilution Phenomenon, editorial, *Lancet* 2: 159, 1944.

3. *The Possible Mode of Action of Gamma Globulin as Related to the Incubation Period of Serum Hepatitis.*—Inasmuch as the evidence obtained from the three studies in the general hospitals suggests the presence of inhibiting factors in certain batches of gamma globulin against the serum hepatitis virus, it is of particular interest to consider the possible manner in which the injection of a single dose, 10 cc., of gamma globulin may prolong the incubation period. A moderate amount of clinical evidence indicates that convalescent mumps plasma, given in sufficient quantities parenterally, at times will lengthen the incubation period of this disease but will rarely protect completely the exposed susceptible person. Such behavior appears to be rare in viral diseases. In serum hepatitis, the length of the incubation period may indicate a balanced relation between parasite and host which lends itself to effective inhibition or lengthening of the incubation period of the parasite by a relatively small amount of inhibiting factor. The effect of the gamma globulin may be based on a purely quantitative relation between the number of viral bodies and the amount of inhibiting factor in the gamma globulin. Thus, two doses of 10 cc. given at a thirty day interval, or 20 cc. in all, may be sufficient to neutralize all of the virus particles present, whereas one dose, 10 cc., may reduce the amount of virus to a point from which the relatively slow process of multiplication is repeated. Thus, the prolongation of the incubation period may be solely the result of delay in the parasite's increase of virus particles to a point at which clinical disease can be developed.

On the other hand, the protective effect of the two doses of gamma globulin may have resulted from the fact that the second injection of antibodies had occurred at a more vulnerable step in the life cycle of the parasite, possibly when it was present in the blood stream and before extensive cellular invasion had occurred. In lieu of further evidence, it would appear that the first and simpler hypothesis is the more tenable.

SUMMARY AND CONCLUSIONS

Gamma globulin from large pools of human plasma apparently contains protective factors against strains of infectious (epidemic) hepatitis IH virus of shorter incubation (approximately eighteen to forty days). Gamma globulin also has shown decided differences in its protective properties against strains of serum hepatitis SH virus of longer incubation (approximately sixty to one hundred and fifty days). In the infectious (epidemic) hepatitis IH, the protective effect has been conclusively demonstrated. In serum hepatitis SH at one general hospital for battle casualties, two injections of gamma globulin, 10 cc. each, given at a thirty day interval during the incubation period of the disease, were highly protective. In two other general hospitals, in which a single injection of gamma globulin (10 cc.) was administered during the incubation period, decided prolongation of the mean incubation periods resulted in the two test groups of battle casualties. In these two hospitals, the gamma globulin apparently did not alter the incidence of hepatitis SH in the test groups, despite its prolongation of the mean incubation periods. Four deaths occurred in the control groups and none in the groups given injections in these two hospitals.

In contrast to serum hepatitis SH, prolongation of the incubation period as the result of previous injection of gamma globulin has not been observed in infectious (epidemic) hepatitis IH, the effect being one of protection or attenuation.

In a group of studies in volunteers, the batches of gamma globulin tested apparently did not contain virus-neutralizing or inhibiting factors effective against the strain of serum hepatitis SH virus used. In a single small study, hepatitis convalescent plasma from one subject failed to afford inhibiting factors against the same strain of serum hepatitis SH virus.

It appears possible that the process of fractionation itself may concentrate the virus in fractions other than the gamma globulin or that the manipulations of filtering and storage may eliminate the virus, while in certain batches of gamma globulin protective antibodies may be an added factor in preventing contamination of the gamma globulin with virus SH.

NOTE.—It was found impossible to trace each source of plasma for the gamma globulin used in these studies. Gamma globulin for the volunteer studies consisted of material derived from more than one biologic firm and from several areas of the United States. It included both fraction II and III-1 gamma globulin, in the proportions they are obtained in the most recent method developed by Oncley and his associates for the subfractionation of II and III. These were lots number 14, 28-4, 33-1, 68-2 and 68-3.

METHODS OF PROTECTION AGAINST HOMOLOGOUS SERUM HEPATITIS

II. The Inactivation of Hepatitis Virus SH with Ultraviolet Rays

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Much attention has been focused on the transmission of the causative agent of homologous serum hepatitis by the parenteral administration of blood and blood products. A number of conclusive experimental studies have shown that plasma and serum may harbor the responsible viral agent.¹ During the recent war, in many battle casualties who had received transfusions of whole blood or plasma, or both, subsequently, within periods of two to five months, homologous serum hepatitis developed.² Since the end of the war and the release of large stores of dried pooled plasma for civilian use in this country, a significantly high incidence of serum hepatitis has been reported resulting from transfusions with this and other plasma.³ Reports from England

by Spurling, Shone and Vaughan⁴ also indicate an incidence of 7.3 per cent homologous serum jaundice among 1,054 patients receiving pooled serum and plasma. Inasmuch as laboratory methods for the detection of ieterogenic agents in blood and blood products have not been perfected, the prevention of homologous serum hepatitis has offered a challenge to investigators in the field of preventive medicine.

Methods of control of homologous serum hepatitis, thus far, have been inadequate. Careful selection of donors has been helpful. However, this latter method does not exclude those persons who might have had inapparent infections and possibly remained as carriers and those persons whose blood might be obtained during the long incubation period of the disease.

A means for inactivating hepatitis virus SH^{1b} in serum albumin by prolonged heating has been demonstrated.⁵ This method, however, is not applicable to whole blood, plasma or serum. Recent experimental studies have shown human immune (gamma) globulin to be unreliable in providing protective antibodies.⁶

The inactivation of other viruses by exposure to ultraviolet rays has been successfully employed by many investigators. The Oppenheimer-Levinson apparatus⁷ and the Habel-Sockrider apparatus,⁸ both utilizing the general principle of irradiating continuously flowing thin films of virus suspensions, have demonstrated the usefulness of these methods under certain conditions.

The possibility of inactivating hepatitis virus SH in plasma and serum has been investigated to a limited extent, but, thus far, the results of these studies have been conflicting. In this country, the work of Oliphant suggested that hepatitis virus SH in serum could be inactivated with ultraviolet rays.⁹ However, in his series of studies, there was wide variation in the amounts of radiant energy used. Also, the effect of irradiation on the serum proteins apparently was not fully determined. In England, MacCallum and his co-workers carried out similar studies.¹⁰ Results contrary to those of Oliphant were obtained, inasmuch as the supposedly suitable exposure failed to inactivate the viral agent. Where greater exposure was used, gross changes in the serum proteins were noted in electrophoretic studies.

The recent work of Wolf and his co-workers, with the Oppenheimer-Levinson apparatus, suggested that plasma may be irradiated without significant alteration of the proteins and safely administered to patients.¹¹ Their work did not involve the use of hepatitis viral agents.

The purpose of this paper is to present experimental evidence indicating that hepatitis virus SH (homologous

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serum jaundice) can be inactivated with ultraviolet rays and that such inactivation may be accomplished by a safe and practical procedure.

METHODS AND MATERIALS

Source and Nature of Materials.—The icterogenic material used in this study represented a pool of serum specimens collected from volunteers during the early stages of induced homologous serum hepatitis. This serum had been continuously frozen at -20°C . for a period of two and one-half years. The strain of virus SH contained in this serum has been described in previous reports.^{1a} One lot of this serum pool, when used six months prior to the present study, produced hepatitis in approximately 50 per cent of the inoculated volunteers.⁵

Volunteers.—Healthy adult male volunteers were used in this study. Preliminary data prior to their inoculation have been dealt with in a previous report.^{1a} Preinoculation hepatic studies were performed on each volunteer to rule out the possibility of asymptomatic hepatic disease and to establish for each subject a range of normal values for the various hepatic tests.

Ultraviolet Apparatus.—A Habel-Sockrider type of apparatus was used for processing the icterogenic serum.⁸ This apparatus consisted of a rotating glass tube, 52 cm. in length and 2.53 cm. in diameter. An 18 watt cold quartz lamp¹² passed lengthwise through the center of the glass tube. This lamp has an intensity of about 3,500 microwatts per square centimeter at a distance of 9 mm., which was the distance from the burner to the surface of the serum irradiated in the rotating tube. Approx-

Postinoculation Follow-Up.—Tests of hepatic function were performed on all volunteers every seven to ten days for the first two months after inoculation and once to twice weekly thereafter. Examinations of urine for bilirubin and urobilinogen were performed on each volunteer two to four times weekly. The tests of hepatic function included the total serum bilirubin and one minute direct-reacting serum bilirubin, sulfobromophthalein sodium, cephalin cholesterol flocculation, serum colloidal gold and colloidal red flocculation, thymol turbidity and flocculation, urine bilirubin and urine urobilinogen tests. Visible scleral jaundice is usually present when total serum bilirubin values are greater than 1.4 mg. per hundred cubic centimeters.

RESULTS

The results are given in the table. Of 11 volunteers in the group of controls who received 4 cc. of non-irradiated icterogenic serum intramuscularly, in 2 hepatitis with jaundice developed after incubation periods of seventy-seven and eighty days. One volunteer had hepatitis without jaundice after an incubation period of eighty-seven days. Three volunteers after incubation periods of seventy-three to eighty days showed signs and symptoms compatible with the diagnosis of mild hepatitis without jaundice. The duration of symptoms and signs in these 3 was seven to twenty-one days. They exhibited malaise, lassitude, anorexia, nausea, occasional vomiting, discomfort in the right upper

Effect of Ultraviolet Rays on Hepatitis Virus SH

Group	Serum	Number Inoculated	Amount	Route	Results			Percentage With Hepatitis
					No. With Hepatitis Jaundice	No. With Hepatitis Without Jaundice	No. With Pre-sumptive Hepatitis	
Control.....	Virus SH, Fort Bragg strain	11	4 cc.	Intramuscular	2	1	3	47
	Mixture: virus SH, Fort Bragg strain and convalescent plasma	4	2 cc. serum; 10 cc. convalescent plasma	Intramuscular	1	0	0	
Ultraviolet ray test group	Virus SH, Fort Bragg strain	11	7 cc.	Intramuscular	0	0	0	0.0

mately 85 per cent of its radiation is given off in the 2,537 angstrom unit wavelength. The glass tube could be rotated at varying speeds. For the present experiment 240 revolutions per minute were used, with the glass tube at an angle of 12 degrees from the horizontal.

Procedure.—The icterogenic serum was thawed and then screened through sterile 200 mesh silk to remove flocculent material. The serum was delivered from a separatory funnel to the side of the rotating tube at a constant rate of flow controlled by a flow meter. The rate of flow was 24 cc. per minute, and the time of exposure was 10 seconds. The average thickness of the film of serum was calculated to be 0.263 mm. Turbulence produced by rotation resulted in a similar exposure to irradiation of all parts of the serum.

Inoculations.—A group of 15 volunteers served as controls and received portions of the same icterogenic serum without irradiation by intramuscular injection. Of this group of 15, 11 volunteers each received 4 cc. of icterogenic nonirradiated serum. Of the remaining 4 volunteers, each received a mixture composed of 2 cc. of icterogenic nonirradiated serum and 10 cc. of plasma from 1 subject, convalescent two and a half months. Each subject also received 20 cc. of the same convalescent plasma after one, two and three months, respectively. This latter group of 4 was controlled by a second group of 4 volunteers, each of whom received 10 cc. of the same convalescent plasma in a single dose. This latter group was arranged for the purpose of determining whether the convalescent plasma harbored active hepatitis virus SH.

Eleven additional volunteers served as the test group to determine the effect of irradiation. Each was given 7 cc. of irradiated icterogenic serum by intramuscular injection. No untoward reaction was observed following inoculation.

abdominal region and right upper quadrant tenderness, particularly noted in the right epigastrium. No significant change in the position of the liver edge was noted. At no other time during the period of observation were similar episodes encountered. None of these 3 volunteers had positive reactions to tests of hepatic function during or following their mild clinical illnesses. The observations did not suggest any other disease process. It was felt that, in view of the incubation period and the nature of the signs and symptoms, one would be justified in classifying the disease in these 3 cases as presumptive hepatitis. Similar observations have been made previously.¹³

Of 4 volunteers in the group of controls who had received a mixture of 2 cc. of nonirradiated icterogenic serum and 10 cc. of convalescent plasma, plus 20 cc. of convalescent plasma after 1, 2 and 3 months, in 1 hepatitis with jaundice developed after an incubation period of ninety-three days. None of the 4 volunteers who received 10 cc. of convalescent plasma alone and served as controls to the aforementioned group showed any evidence of hepatitis.

The incidence of hepatitis in the group of 15 controls, therefore, was 47 per cent, if one includes the 3 cases of presumptive hepatitis. If the 3 subjects with presumptive hepatitis are excluded, the incidence of 4

13. Neefe, J. R.; Stokes, J., Jr.; Garber, R. S., and Gellis, S. S.: Studies on the Relationship of the Hepatitis Virus to Persistent Symptomatic, Disability, and Hepatic Disturbance ("Chronic Hepatitis Syndrome") Following Acute Infectious Hepatitis, *J. Clin. Investigation* 26: 329 (March) 1947.

undoubted cases of hepatitis in 15 volunteers is 27 per cent. The maximum total serum bilirubin values in the 3 controls with jaundice were 7.9, 1.6 and 3.1 mg. per hundred cubic centimeters.

Of the group of 11 volunteers, each of whom received 7 cc. of irradiated serum intramuscularly, none showed the slightest clinical or laboratory evidence of hepatitis during an observation period of five months. It should be noted that the dosage used, 7 cc., was almost double that used for the controls.

It was deemed advisable to determine whether allergy had developed in the volunteers who received the irradiated serum as a result of any altered protein that might have been present. Preliminary electrophoretic and biochemical studies of plasma similarly exposed to ultraviolet rays had demonstrated no alterations in the plasma proteins except for slight reduction in prothrombin and complement. It was necessary, therefore, to determine by clinical trial whether or not subsequent injections of irradiated plasma might give rise to allergic manifestations, because of sensitization resulting from any minimal protein changes.

Irradiated normal plasma which had received the same exposure as the icterogenic serum was injected intradermally, intramuscularly and intravenously in amounts of 0.1 cc., 1.0 cc. and 10.0 cc., respectively, in a group of 5 volunteers who had originally received irradiated serum. In addition, the same tests were carried out on an equal number of controls. No allergic response or untoward reaction was noted following these tests. Five additional volunteers who had originally received the irradiated serum were then tested for sensitivity with larger injections of irradiated plasma. Each was given 10 cc. of irradiated plasma intravenously. No untoward response was observed during a forty-five minute period of observation. Each was then given an intravenous injection with amounts of irradiated plasma ranging from 75 to 150 cc. There was no immediate or delayed reaction, and their temperatures remained normal. Clinical sensitivity studies, therefore, seemed to substantiate the lack of important electrophoretic and biochemical alterations in the irradiated plasma.

COMMENT

The incidence of hepatitis in the groups of controls, including the 3 cases of presumptive hepatitis, was 47 per cent as compared to 0 per cent in the test group that received irradiated serum. Whether or not the 3 presumptive cases are included, these results are significant.

One of the principal factors involved in the amount of exposure that any given material receives in the apparatus for irradiation, previously described, is the rate of flow of that material through the apparatus. Hampil and her co-workers¹⁴ have shown that neurotropic viruses in general, with the exception of rabies virus, are more resistant and require a slower rate of flow for inactivation than a number of other viruses. Since hepatitis virus SH has been shown to be unusually resistant to various physical and chemical agents, it was felt that the infective serum should be exposed to irradiation within the rate of flow range employed for inactivation of certain neurotropic viruses previously tested.

Another important factor was the possible alteration of serum proteins by irradiation. With the method employed, the earliest detectable protein changes are found with a rate of flow of 16 cc. per minute. The

rate of flow in this study was 24 cc. per minute. Chemical fractionation and electrophoretic studies of normal human plasma irradiated at the same rate of flow as the icterogenic serum revealed no alteration of proteins except for a slight decrease in prothrombin and complement. In the relatively small number of cases studied, no allergic manifestations developed in members of the test group when later studied for acquired sensitivity by intradermal, intramuscular and intravenous injections of irradiated normal plasma.

Since there are no laboratory methods for the detection of virus SH in plasma and serum, it is apparent that inadvertent administration of icterogenic blood products cannot be avoided unless certain measures, such as carefully controlled routine exposure to ultraviolet rays of human plasma and serum, would render them safe for administration.

Oliphant²⁰ pointed out that the factors of titer of the icterogenic agent and the dose of serum given could possibly have an influence on the "icterogenic capacity" of irradiated material. Both in his experiments and in the present one, there was no possibility of determining the importance of these factors.

The preparation of virus vaccines by exposure to ultraviolet rays of suspensions of virus suggests the possibility of producing a vaccine for homologous serum hepatitis using known icterogenic materials. Whether or not hepatitis virus SH retains its antigenic properties following inactivation is not known. The resistance of the subjects inoculated with irradiated serum will be tested later. With no method of estimating the concentration of virus SH in a given amount of serum or plasma and no method of concentrating the virus, one might find it difficult to produce a reliable method for immunization.

SUMMARY AND CONCLUSIONS

A practical, safe and effective method for irradiating icterogenic serum and plasma is presented. Of 15 volunteers who received nonirradiated icterogenic serum, in 3 hepatitis with jaundice developed, in 1 hepatitis developed without jaundice and 3 had presumptive hepatitis. Of 11 volunteers who received irradiated icterogenic serum, none showed any evidence of hepatitis. Similarly irradiated plasma revealed no alteration of the electrophoretic pattern. By chemical fractionation methods, the plasma proteins were essentially normal. There was a slight decrease in prothrombin and complement. The initial inoculation of 11 volunteers with irradiated serum produced no untoward reaction. Subsequent inoculation of 10 of these volunteers with irradiated plasma intradermally, intramuscularly and intravenously, revealed no evidence of acquired sensitivity. This clearcut result strongly favors the routine use of exposure to ultraviolet rays of serum and plasma under properly standardized conditions.

Cost of Radioactive Materials.—Use of the facilities and by-products of the reactor at Oak Ridge has increased tremendously the supply of radioactive materials, progressively reduced their costs to qualified research agencies, and brought many of the rarer substances within reach of the ordinary technician. A report issued by the United States Commission on the completion of the first year of the isotope program gave examples. One millicurie of carbon 14, if produced by using a cyclotron, would cost approximately \$1,000,000; the same amount manufactured in the atomic piles of Oak Ridge is being sold at \$50. —The Department of State publication 3161, General Foreign Policy Series 3, released June 1948.

14. Personal communication to the authors.

INHALATION OF PENICILLIN DUST

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The preliminary results obtained with the inhalation of penicillin dust indicate that this is an effective and practical method in the treatment of many types of infections of the respiratory tract.¹ The present report is a more extensive study of this procedure carried out on 357 patients from October, 1946.² In this study more inclusive information has been obtained on the following aspects of the problem: the incidence and nature of allergic reactions occurring with the method, an evaluation of the efficiency of this method in a large number of patients, particularly those with bronchiectasis, and a further refinement of the method to increase its practicality for home, office and hospital use.

APPARATUS

The apparatus devised for this purpose delivers a fine nonirritating penicillin dust to the respiratory tract. It is simple mechanically and therefore lends itself to immediate use, when such treatment is indicated, in the hospital, office or home.

The original device consists of an oronasal face piece, which is held on the face by an elastic head band (fig. 1). The front of the mask contains a large exhalation valve (A) in direct line with the stream of exhaled air. The portion of the mask beneath the chin contains a rubber sleeve (C) fitted with an inhalation valve (B) which directs the inhaled air in a plane at right angles to the stream of exhaled air. The inhalation valve is fitted with a detachable metal chamber (D) containing the penicillin dust. The chamber is fitted with a fine rayon wire mesh platform (E), on which the penicillin dust is placed. During inhalation, the air is drawn through this platform and lifts the penicillin dust through the inhalation valve into the airways. The penicillin dust is protected against exhaled moisture by the one way inhalation valve and the arrangement by which the exhaled air is released in the plane at right angles to the inhaled air. There is a hole in the top of the mask about 6 mm. in diameter. This additional air inlet avoids any feeling of resistance on inspiration and is necessary in order to keep the amount of inhaled penicillin dust at optimum quantities. The penicillin dust used in this study was crystalline sodium penicillin G, processed to no. 50 to 100 mesh particles.³

Recently a modification of this apparatus was constructed (figs. 2, 3 and 4) to deliver penicillin dust more thoroughly throughout the respiratory tract.⁴ This device consists of a molded plastic discharge chamber, a detachable mouth piece and an alternate molded nose piece. The penicillin dust is contained in a small plastic cartridge, the bottom of which is fitted with a fine mesh wire screen, through which the penicillin dust

is released. The upper rim of the cartridge exhibits two small flanges, which fit into a groove and allow locking the cartridge in position in the discharge chamber. The distal end of the discharge chamber is formed into a curved tube runway containing an aluminum ball. On inhalation the aluminum ball is rapidly drawn up the runway until it strikes the cartridge containing the penicillin; the impact causes a release of a small amount of the penicillin dust into the discharge chamber. The upper end of the runway is grooved, so that the air to be inspired can by-pass the aluminum ball after it strikes the cartridge; the air to be inspired, as it by-passes the ball, carries the released penicillin dust directly into the respiratory passages. Thus, with each respiration a small but uniform amount of dust enters the respiratory passages until the total dose has been consumed; this is usually accomplished within three to five minutes. This is an advantage over the original device, which did not control the amount of dust per inhalation. Expiration is effected by breathing around the inhaler, through the nose if the mouth piece is used, through the mouth if the nose piece is used or by removing the inhaler from the mouth during expiration.

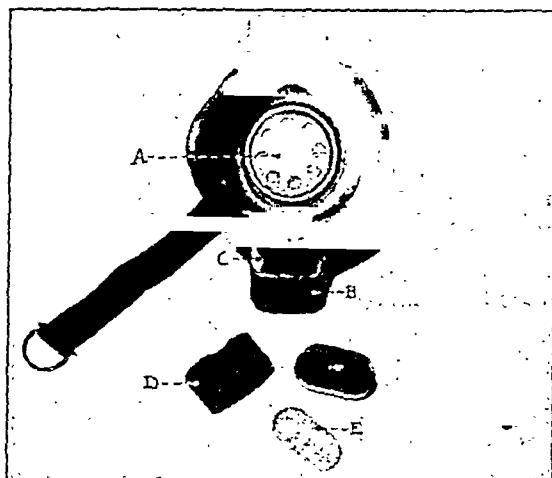


Fig. 1.—Oronasal mask for inhalation.

By omitting the valve mechanism for exhalation, it has been possible to reduce the loss of drug adhering to the apparatus surfaces to 10 per cent, as determined by assaying the penicillin content remaining in the inhaler after treatment is completed. This obviates one of the disadvantages of the mask used in the original work, as the mask has a larger surface to which penicillin may adhere.

PROCEDURE

Twenty normal subjects (including the authors) were used as an experimental group to determine any untoward effects of inhaling penicillin dust. This group was also used to establish penicillin blood level curves. Three hundred and fifty-seven patients with various types of infections of the upper and lower parts of the respiratory tract (table 1) were treated by this method; 174 were hospitalized and 183 were ambulatory. All hospitalized patients received 100,000 units of penicillin dust three times a day. Inhalations were continued until all the dust was inhaled, usually three to six minutes. Patients were instructed to refrain from eating or drinking for one hour following the treatment, to avoid washing down the penicillin dust from the

From the Department of Clinical Science, University of Illinois Medical School (Dr. Krasno), the Division of Medicine, Northwestern University Medical School (Dr. Rhodes), and the Division of Surgery, Northwestern University Medical School, Department of Anesthesiology, Wesley Memorial Hospital, and Passavant Memorial Hospital (Dr. Karp).

1. Krasno, L.; Karp, M., and Rhodes, P. S.: Inhalation of Penicillin Dust, *Science* **106**: 249-250 (Sept. 12) 1947.

2. Since this paper was written there have been 160 additional cases, making a total of 517 patients treated with the inhalation of penicillin dust.

3. The penicillin for this study was processed by and furnished by the Abbott Laboratories, North Chicago, Ill.

4. This device for the inhalation of penicillin dust was originally developed by the Abbott Laboratories. The authors cooperated by offering suggestions for improvements on the original model.

posterior pharyngeal wall. The bronchiectatic patients received 100,000 units of penicillin dust three times a day for seven to ten days in the hospital, and the same regimen was continued for another week at home. During the third week 100,000 units of penicillin dust were inhaled one to two times a day, depending on the

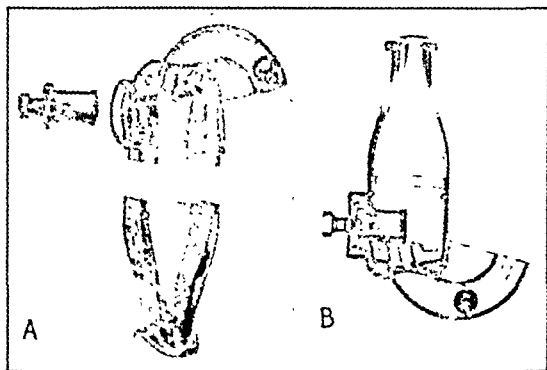


Fig. 2.—A, mouth inhaler disassembled. B, sagittal section of mouth inhaler assembled.

requirements. There was gradual reduction in the number of treatments per week until the optimum number of treatments per week needed for maintenance of comfort was determined. Ambulatory patients received 100,000 units of penicillin dust one to three times a day, depending on the particular condition involved. Ambulatory bronchiectatic patients received one daily treatment at the office and two treatments at home for ten days. Thereafter the regimen followed was similar to that of hospitalized patients. Throat and nose cultures prior to first treatment and after last inhalation were made for all hospitalized patients. In the first 68 patients treated with this method, daily nose and

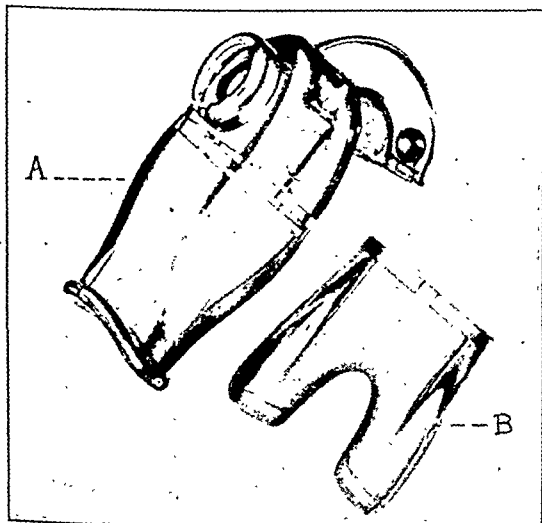


Fig. 3.—Mouth inhaler assembled (without penicillin cartridge) (A) and molded detachable nose piece (B).

throat cultures were obtained. Bacteriologic examinations of sputum were done when specimens were obtainable. The clinical progress of the patient was followed by the report of the patient, his physician and the authors. The duration of treatment for each subject was determined bacteriologically and by the clinical progress made. Approximately two thirds of the subjects had less than three treatments. The highest

number was reserved for the patients with chronic bronchitis, chronic sinusitis, bronchiectasis and bronchial asthma. It was not practical to obtain laboratory data for some of the ambulatory patients. However, this group gave added information regarding the clinical progress and allergic aspects of this type of treatment.

At the present time experiments are being conducted with streptomycin dust. One third of a gram of streptomycin and 100,000 units of penicillin are given three times a day. Experimental work is also being done on the distribution of the penicillin dust particles in the respiratory tract. The data obtained will be presented in a subsequent report.

RESULTS

The clinical conditions treated are tabulated in table 1. Two hundred and thirty-nine subjects (67 per cent) presented infections of the upper part of the respiratory tract, 169 of whom had symptoms of the "common cold." One hundred and ten patients (30 per cent) had infections of the lower part of the respiratory tract. Eight patients received penicillin dust as prophylaxis in the preoperative and postoperative management of surgical interventions.

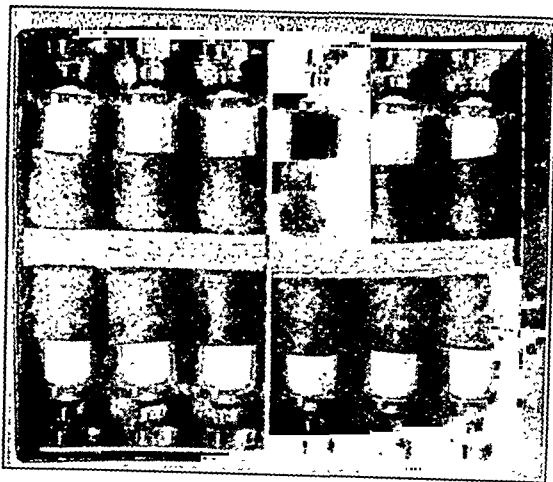


Fig. 4.—Cartridges boxed and ready for use. Each cartridge contains 100,000 units of penicillin.

TABLE 1.—Clinical Diagnosis of 357 Patients Treated (174 Hospital Patients; 183 Outpatients)

Clinical Diagnosis	Number of Cases
I. Infections of the Upper Part of the Respiratory Tract	
"Common cold" (acute rhinitis and/or nasopharyngitis)	169
Subacute and chronic nasopharyngitis	26
Acute and chronic sinusitis	38
Acute and chronic laryngotracheal bronchitis	6
II. Infections of the Lower Part of the Respiratory Tract	
Bronchiectasis	38
Acute and chronic bronchitis	41
Pneumonia	24
Pulmonary abscess	6
III. Miscellaneous	
Preliminary treatment for operation	5
Prophylactic treatment following operation	5

Tables 2, 3 and 4 present bacteriologic data⁵ obtained from throat, nose and sputum cultures prior to and following completion of the course of inhalation therapy.

5. These charts represent bacteriologic data based on the first 39 hospitalized patients treated. The bacteriologic results obtained in the remaining hospitalized patients were essentially the same.

There was a decided reduction in the number of, or complete disappearance of, gram-positive bacteria, as determined by bacterial cultures from the nose, throat and sputum. In many instances there was a decided decrease in the number of gram-negative bacteria that could be cultured from the same areas following the inhalation of penicillin dust. Not infrequently these results were accomplished following one inhalation treatment. Figure 5 illustrates a blood agar plate of a throat culture prior to the inhalation of 100,000 units of penicillin dust. The profuse growth of streptococcic colonies is entirely absent on plate B, which contains a culture of a specimen taken two hours following the inhalation of 100,000 units of penicillin dust. Another culture, made twenty-four hours after treatment, showed no growth of bacteria. Penicillinase was added to all cultures, so that any penicillin present in the material obtained for culture would be neutralized; thus, favorable changes in the bacterial flora of the upper part of the respiratory tract, as evidenced by the bacteriologic results reported in tables 2, 3 and 4, reflect the beneficial effects with the penicillin dust in situ and are not the

material in the table is arranged according to the extent of the growth of a given organism before and after the course of treatment. It is interesting to note that all of the organisms, including gram-negative bacteria, were appreciably influenced by the treatment. Prior to inhalation of penicillin dust 14 patients had a heavy growth of *Streptococcus viridans*, 10 showed a moderate growth and 1 had a light growth. After a course of treatment, there was 1 instance of heavy growth, 4 of moderate growth, 7 of slight growth and 13 of no growth after seventy-two hours of incubation on blood agar plates. In the cases of *Diplococcus pneumoniae* there was one of heavy growth, 10 with moderate growth before inhalation of dry penicillin. After treatment the *Diplococcus pneumoniae* disappeared in all 11 patients.

Table 3 indicates that organisms in the nose quickly disappeared after inhalation of dry penicillin.

Table 4 illustrates the effects of the treatment on the sputum specimens. Before treatment 6 patients showed a heavy growth of *S. viridans* and 5 a moderate growth. After inhalation of dry penicillin there was a slight



Fig. 5.—Blood agar plates of throat culture. The culture on the left was made prior to inhalation of 100,000 units of penicillin dust. The culture on the right was made two hours following the inhalation of 100,000 units of penicillin dust (penicillinase was added).

TABLE 2.—Summary of Bacteriologic Data from Throat Cultures

Organism	Growth Before Treatment			Growth After Treatment			No Growth
	Heavy	Moderate	Slight	Heavy	Moderate	Slight	
<i>a</i> hemolytic streptococci (<i>Str. viridans</i>)	17*	12	1	1	4	9	16
<i>β</i> hemolytic streptococci (<i>Str. hemolyticus</i>)	2	1	..	..	..	..	3
<i>Diplococcus pneumoniae</i>	1	10	..	..	..	..	11
<i>γ</i> anhemolytic streptococci	..	4	..	..	2	..	2
<i>Staphylococcus aureus</i>	1	10	3	..	7	3	4
<i>Staphylococcus hemolyticus aureus</i>	1	4	..	..	..	..	5
<i>Staphylococcus albus</i> ..	5	17	2	..	10	4	10
<i>Neisseria catarrhalis</i> ..	..	11	2	..	6	4	3
<i>Micrococcus tetragenous</i>	..	3	..	..	..	..	3
<i>Aerobacter aerogenes</i> ..	..	1	..	..	..	1	0
<i>Bacillus hoffmannii</i> ..	..	3	..	..	..	1	2
<i>Diphtheroids</i>	..	2	..	..	..	1	1

* Numerical values represent number of cases.

results of penicillin being carried over into the culture medium and exhibiting a bacteriostatic effect in vitro.

Table 2 illustrates the effect of dry penicillin on the various types of organisms seen in the throat. The

growth in 4 cases and no growth in 7 cases. In 1 case there was a moderate growth of *D. pneumoniae* and a slight growth in 2, which disappeared in each instance following treatment. In 2 cases there was a moderate growth of *Streptococcus hemolyticus*, which completely disappeared after inhalation.

PENICILLIN BLOOD LEVEL CURVES

Figure 6 demonstrates blood levels observed when penicillin was inhaled by means of a mouth inhaler. Six subjects were given 100,000 units of penicillin and hourly blood levels were determined. The same 6 subjects were given 100,000 units of penicillin intramuscularly and comparable blood level determinations were made. The results demonstrate that the peak level is reached in one hour and that therapeutic levels are sustained for about a five hour period.

ALLERGIC REACTIONS

In the first 160 patients treated with the mask the incidence of allergic reactions was 6 per cent. With one exception these reactions were local in character and were manifested as contact dermatitis, stomatitis and posterior pharyngeal irritation. One case was

noted of generalized maculo-papular eruption and itching without other systemic manifestation. Creaming the face with wool fat before and washing with bland soap and water following treatment helped to minimize the reaction considerably in the patients in whom contact dermatitis developed. Since this protective regimen was instituted the incidence of contact dermatitis has been reduced to 3 per cent in a subsequent group of 197 patients.

The nature and extent of allergic reactions noted with the inhalation of penicillin dust have been altered since the plastic mouth inhaler has been put into use. There has been, so far, no evidence of contact dermatitis noted with the use of the mouth inhaler. There is little chance of penicillin dust coming in direct contact with the skin of the face. The reactions noted with the mouth inhaler have been primarily those of posterior pharyngeal irritation and stomatitis. Up to the time of writing, 3 per cent of the patients exhibited this type of reaction with this device. There were no instances of angioneurotic edema of the upper respiratory passages or generalized anaphylactoid manifestations with the use of the mask or the mouth inhaler in over 357 cases.

The development of contact dermatitis is no contraindication to continuing treatment, provided that the

three days. The "common cold" syndrome of acute rhinitis, lacrimation, nasopharyngitis and general malaise responded to inhalation therapy. Forty-two per cent were considered cured; 38 per cent were judged as 3 plus improved. In many instances the penicillin dust seemed to exert a vasoconstrictor action

TABLE 3.—Summary of Bacteriologic Data from Nose Cultures

Organism	Growth Before Treatment			Growth After Treatment			
	Heavy	Mod-erate	Slight	Heavy	Mod-erate	Slight	No Growth
<i>a hemolyticus streptococci</i>	..	2*	..	..	..	..	2
<i>β hemolyticus streptococci</i>	1	1	..	..	..	..	2
<i>Diplococcus pneumoniae</i>	..	..	..	..	..	..	1
<i>γ anhemolyticus streptococci</i>	..	1	..	..	..	..	1
<i>Staphylococcus aureus</i>	..	2	..	..	..	..	2
<i>Staphylococcus aureus hemolyticus</i>	..	3	..	..	..	1	..
<i>Staphylococcus albus</i>	..	7	4	..	1	2	6
<i>Neisseria catarrhalis</i>	..	1	1	..	..	..	2
<i>Bacillus proteus vulgaris</i>	..	1	..	..	..	..	1

* Numerical values represent number of cases.

of the mucous membrane of the nose and throat. Patients stated that they could breathe more freely through the nose and the stuffiness and congestion of the acute rhinitis often improved immediately after treatment. Also, on occasion the pain of an acutely sore throat was ameliorated in one-half to one hour following a treatment. These phenomena cannot be fully explained on the basis of the known properties of penicillin and need further investigation.

BRONCHIECTASIS

The aerosol method probably has its greatest merit in diseases affecting the surfaces of the bronchi, such as in bronchitis and bronchiectasis. The most notable results were obtained in bronchiectatic patients who showed toxic absorption from the disease process, as evidenced by loss of weight, low grade fever and profuse amounts of sputum. Pathologic changes were evident on roentgenologic examination. Thirty-eight patients with bronchiectasis were treated. Thirty of the patients received inhalation of 100,000 units of penicillin

TABLE 4.—Summary of Bacteriologic Data from Sputum Cultures

Organism	Growth Before Treatment			Growth After Treatment			
	Heavy	Mod-erate	Slight	Heavy	Mod-erate	Slight	No Growth
<i>a hemolyticus streptococci (Str. viridans)</i>	6*	3	..	..	..	4	7
<i>β hemolyticus streptococci</i>	..	2	..	..	..	..	2
<i>Diplococcus pneumoniae</i>	..	1	2	..	..	..	3
<i>γ anhemolyticus streptococci</i>	..	2	..	..	1	..	1
<i>Staphylococcus aureus</i>	3	3	..	..	2	2	2
<i>Staphylococcus albus</i>	1	3	..	..	5	..	1
<i>Neisseria catarrhalis</i>	..	3	1	..	2	2	..
<i>Micrococcus tetragenous</i>	..	1	..	..	..	..	1
<i>Bacillus mucosus capsulatus</i>	..	2	..	..	..	..	2
<i>Neisseria pharyngis sicca</i>	..	..	1	..	..	..	1

* Numerical values represent number of cases.

dust three times daily for varying periods of time. Eight received combined parenteral and inhalation therapy.

Twelve of the 38 patients (32 per cent) with bronchiectasis showed much improvement, as evaluated by the patients, attending physicians and authors. The disease in these patients had remained in a quiescent form two to eight months following the course of

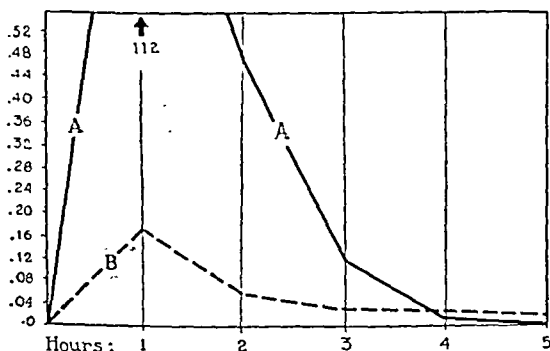


Fig. 6.—Average blood levels of penicillin obtained in 6 subjects. A indicates blood levels following 100,000 units of penicillin given intramuscularly, and B, blood levels following the inhalation of 100,000 units of penicillin dust. The vertical column shows units of penicillin per cubic centimeter of serum.

patient is seriously in need of such treatment and precautions are taken to protect the patient locally and with antihistaminic drugs. Continued use in patients in whom contact dermatitis develops has, as yet, failed to produce any untoward systemic reactions.

GENERAL RESULTS

The clinical results from the inhalation of penicillin dust have been gratifying (table 5). Some conditions responded dramatically, while others progressed slowly, requiring more persistent treatment. In most instances, however, it was believed that this form of treatment was of definite value. The bronchiectatic patients serve, perhaps, best for evaluation of clinical results. In these patients spontaneous remission of the disease is not likely to occur. The results obtained in these patients in our series can be attributed justifiably to this particular type of treatment. In this group improvement of varying degree was obtained in all cases.

The patients with bronchial asthma and chronic bronchitis had moderate to decided improvement, although the allergy persisted to a decreased degree. Patients with asthmatic conditions of bacterial origin improved remarkably.

The patients with acute rhinitis and laryngotracheal bronchitis usually recovered completely within one to

treatment, with one to two inhalations of penicillin dust a week to maintain them free from infections of the respiratory tract.

One patient had a large pulmonary abscess complicating his bronchiectasis. This cleared up gradually following two hundred and ten inhalations of penicillin dust during his hospital stay and ninety similar treatments at home. Seventeen patients (44 per cent) were considered moderately improved. Three were given a series of treatments before and after lobectomy. The rest had only slight amelioration of symptoms.

Before the use of the present method, many patients with chronic pulmonary disease were not given adequate treatment because of the expense of prolonged hospitalization and equipment. The mask or inhaler utilizing dust aerosol permits the start of treatment in the hospital and continuation at home, or it permits a patient to go about his business without loss of time and with minimum expense.

Sufficient data are not available from our studies employing streptomycin dust to permit a clinical evaluation. Five patients have received this treatment for

TABLE 5.—Results in 357 Patients Treated

Clinical Diagnosis	Clinical Results *				
	0	+	++	+++	++++
I. Infections of the Upper Part of the Respiratory Tract					
"Common cold" (acute rhinitis and/or nasopharyngitis).....	3†	5	25	65	71
Subacute and chronic nasopharyngitis	..	2	7	0	8
Acute and chronic sinusitis....	2	1	6	16	13
Acute and chronic laryngo-tracheal bronchitis.....	1	..	1	..	4
II. Infections of the Lower Part of the Respiratory Tract					
Bronchiectasis	..	..	6	17	12‡
Acute and chronic bronchitis....	3	2	7	12	17
Bronchial asthma with acute or chronic bronchitis.....	2	2	7	0	4
Pneumonia	..	1	..	1	4
Pulmonary abscess.....	..	..	..	..	1
III. Miscellaneous					
Preoperative treatment	No result could be noted				
Postoperative treatment.....	No result could be noted				

* Clinical results expressed as 1, 2, 3 or 4 plus improvement.

† Numerical values represent number of cases.

‡ The patients with reactions of 4 plus had remained essentially symptom free to the time of writing.

periods over ten days. The gram-negative bacteria have disappeared from the sputum in all instances, leaving a mild to moderate growth of yeast cells. In only 1 case stomatitis developed after three days of treatment. This cleared up in three days after use of the drug was discontinued.

COMMENT

One could anticipate the destruction of penicillin-sensitive organisms when placing penicillin dust at the bacterial site. There were, however, two unknown and important questions which could not be evaluated beforehand. First, would the inhalation of penicillin dust in 100 per cent concentration give rise to serious untoward reactions? Second, what clinical results would be obtained by such a procedure? Among 357 patients treated by inhalation of penicillin dust the allergic reactions were less than would have been anticipated. The best explanation is that penicillin in dust form (50 to 100 mesh in size) is absorbed over a relatively long period of time. Slow absorption is indicated by the presence of therapeutic blood levels four to five hours after inhalation. The rate and extent of absorption of an antigenic substance modifies the nature of the response to that substance. It is theoretically possible that the desensitization of penicillin-sensitive persons may be taking place by virtue of a slow

absorption phenomenon. In view of the paucity of systemic reactions it appeared justifiable to continue to treat seriously ill patients, such as those with bronchiectasis, in spite of the presence of contact dermatitis. Continuation of such procedure has not as yet produced any systemic reactions. In 1 case the contact dermatitis eventually disappeared and did not recur with subsequent treatment.

The authors are aware of the difficulties attendant on the evaluation of clinical data. However, the clinical results obtained from this dry aerosol therapy were most gratifying. The method is simple and inexpensive. One hundred and thirty-four patients (37.5 per cent of all patients treated) were judged as greatly improved and 129 patients (36 per cent) as moderately improved. Therefore, 73.5 per cent of the entire group had a satisfactory amelioration of symptoms.

It should be emphasized that only in relatively mild bacterial infections of the upper respiratory passages can penicillin dust be relied on as the total treatment, and, if there is not a rapid response in these cases, parenteral antibiotic administration, biologic therapy or treatment with sulfonamide drugs may be necessary. In such diseases as chronic sinusitis, bronchiectasis and bronchial asthma associated with infection, measures directed at securing drainage, combating allergies, liquifying and the like must supplement the treatment.

SUMMARY AND CONCLUSIONS

A simple apparatus for the inhalation of penicillin dust has been developed, making penicillin inhalation therapy easily available for home and office use.

Three hundred and fifty-seven patients were treated with the inhalation of 100,000 units of penicillin dust one to three times daily. Inhalation therapy was continued at home for varying periods of time in all cases of bronchiectasis.

Throat, nose and sputum cultures showed decided diminution of the gram-positive bacteria. In many instances the gram-negative bacteria decreased also.

Penicillin blood level curves indicated absorption from the respiratory tract. Maximum levels of penicillin in the blood are obtained one hour after inhalation. Therapeutic levels are maintained for a period of five hours following the inhalation.

The incidence of allergic reaction in the 357 patients treated by this method was 3 to 6 per cent. The reactions were local in character, manifested as contact dermatitis, stomatitis and posterior pharyngeal irritation. It would seem that the gradual rate and extent of absorption of penicillin dust may account for the low incidence of systemic reactions.

The continued use of penicillin dust in seriously ill patients (with bronchiectasis) in whom contact dermatitis develops failed to produce any systemic reactions.

This method lends itself particularly to the treatment of bronchiectasis. Initial improvement can be obtained usually within ten days to two weeks and can be maintained by continued treatment at home.

Streptomycin dust is now being used, and with the exception of 1 case of stomatitis no untoward reactions have been noted.

While inhalation of penicillin dust almost invariably produced improvement in all types of bacterial infections of the upper part of the respiratory tract, it should again be emphasized that it cannot always be relied on as the total treatment of these infections, to the exclusion of intramuscular or intravenous administration of penicillin, attention to allergic sensitivity, local drainage of sinuses and bronchiectatic cavities and the like.

GENERAL PRACTITIONERS SESSION

THE UNKNOWN DIABETIC AND HOW
TO RECOGNIZE HIMRUSSELL M. WILDER, M.D.
Rochester, Minn.

The diagnosis of diabetes mellitus, in a frank instance of the disease, is one of the easiest that can be made reliably. Even in patients who are symptomless, diagnosis is possible on the basis of a dependable determination of the level of sugar in blood taken from the patient after twelve or fourteen hours of abstinence from food. With the Folin and Wu technic for blood sugar analysis, the finding of something more than 120 mg. per hundred cubic centimeters of reducing substance expressed as dextrose establishes the fact of diabetes with an error which is smaller, I suspect, than that involved in the diagnosis of any other disease. A degree of overstatement is involved in this assertion and certain reservations will be mentioned later.

On the other hand, to be able to affirm with confidence that glycosuria in a given person is significant of diabetes when the fasting blood sugar is lower than 120 mg. per hundred cubic centimeters requires much discrimination. In cases such as this difficulties are encountered and a considerable incidence of error is involved. Mistakes are made in both directions. On the one hand, mild but potentially disabling diabetes is not infrequently neglected, and on the other hand persons are labeled diabetic on insufficient evidence. I could cite numerous examples of patients who, on one examination, showed a trace of sugar in the urine which was ignored at the time by their physicians and who later returned with frank diabetes mellitus. In many of them the fasting blood sugar was determined and a normal value was obtained. I also could cite instances in which significant injustice has resulted because a diagnosis of diabetes mellitus was based on an improperly interpreted dextrose tolerance test, with the result that the person either was denied life insurance or had to pay an increased premium for insurance. Which of the two mistakes is considered the more serious depends on points of view. Both are regrettable, but if I had to choose between them I should say that the advantage to persons with potential diabetes of being put on their guard and thereby protected against development of frank disease outweighs the occasional injury to persons for whom a diagnosis of diabetes is unjustified. In other words, I prefer to err, if err I must, on the side of certainty that there is no diabetes. A good rule, in my opinion, is to regard all positive reactions for reducing substances in the urine as indicative of diabetes mellitus until proved otherwise, but to obtain in all such cases an examination of the blood and, if this is normal, an oral dextrose tolerance test. If the result of the tolerance test is surely negative all is well and good; if it is distinctly positive, even when the fasting blood sugar level is normal, the disease is diabetes mellitus; if the test is equivocal, which unfortunately is not infrequent, a diagnosis is unjustified but reexamination later or repeatedly ought to be carried out.

MELITURIA ALONE NOT DIAGNOSTIC

All too often diabetes has been diagnosed on the sole basis of a finding of some reducing substance in the urine. This is inexcusable, since a number of benign conditions are thereby mistakenly labeled diabetes mellitus. Such patients are subjected to the injury of whatever stigma attaches to the diagnosis of diabetes; they also not infrequently are subjected to unnecessary restrictions of their diets or, worse still, to injections of unneeded insulin. The possibility of error in diagnosing diabetes from urinary tests alone is very great. The incidence of nondiabetic melituria is high. In a series of insurance examinations reviewed by Exton¹ diabetes was responsible for positive results of urinary tests in only about half of 800 specimens of urine in which the amount of reducing substance expressed as dextrose was 1 per cent or less. The positive results in the balance of the specimens were caused by something other than dextrose or, if due to dextrose, diabetes could be ruled out by a tolerance test. If the reducing power of the urine is more intense, with the reducing substance, expressed as dextrose, exceeding 1 per cent, the likelihood of error is diminished. In 97 per cent of 200 such specimens of urine the reducing substance was dextrose. However, in some of them blood sugar levels remained within normal range on an oral tolerance test so that diabetes mellitus could be excluded.

Reducing substances other than dextrose which appear in the urine include lactose, galactose, fructose, maltose, mannoheptulose and pentose. It also has been suspected that ascorbic acid (vitamin C) may, at times, provoke positive urinary tests. This, however, seems unlikely, since the reducing power of ascorbic acid is something less than that of dextrose, and even very large therapeutic doses (1,000 mg.) seem not to be sufficient to affect the reducing power of the urine. Specific chemical tests are available for the identification of the sugars other than dextrose found in urine, but such identification represents a refinement of little practical importance. None of these other meliturias affect the patient's health, and the amount of any of these substances in the blood probably never is sufficient to influence significantly the reducing power of the blood, whereas the diagnosis of diabetes depends primarily on the level of sugar in the blood.

BLOOD SUGAR VALUES

I stated earlier that a fasting venous blood sugar value of 120 mg. or more per hundred cubic centimeters is acceptable, with certain reservations, as diagnostic of diabetes mellitus. Infections, recent injuries or hyperthyroidism may elevate the concentration of blood sugar and confuse the issue; so also may hyperpituitarism, functioning adrenal tumors, encephalopathies and acute coronary occlusion. Occasionally the blood sugar level rises in renal failure and likewise with arteriosclerotic changes of the kidneys. Due allowance must be made for such conditions. Fasting blood sugar values tend to rise with age. However, they seldom normally exceed 120 mg. per hundred cubic centimeters. On the other hand, low fast-

From the Division of Medicine, Mayo Clinic.
Read in a panel discussion on Treatment of the Ambulatory and Hospitalized Diabetic Patient at the interim meeting of the American Medical Association, Cleveland, Jan. 8, 1948.

1. Exton, W. G.: Differential Diagnosis of Conditions Associated with Sugar Excretion, New York State J. Med. 36: 1545-1553 (Oct. 15) 1936.

ing values for blood sugar occur in true diabetes mellitus, and care must be taken not to be misled by them. In many cases, especially in children, a stormy onset of diabetes is followed by remission which may last for several months, and in this period fasting blood sugar values may fall within the normal range. Likewise in many cases of mild diabetes restriction of the diet is sufficient to bring fasting values down to normal levels. Malingers effect the same either by fasting or by taking a dose of insulin shortly before the time of examination. In such instances, examination of the urine and blood for sugar forty-five to sixty minutes after a meal liberal in carbohydrate may be helpful, especially if the value then is found to be not less than 180 mg. per hundred cubic centimeters. Otherwise a tolerance test is indicated.

THE DEXTROSE TOLERANCE TEST

The dextrose tolerance test should not be made if the diagnosis of diabetes has previously been established either from the history or from the finding of an abnormal elevation of the fasting blood sugar. It gives imperfect information about the severity of diabetes, and the ingestion of the necessary amount of dextrose is not without injurious potentiality when the diabetes is of much severity.

There is no unanimity of opinion as to how the tolerance test should be conducted. Consensus favors the one dose, three hour test with a solution of dextrose administered by mouth and determinations of blood and urinary sugar made before and at spaced intervals after the patient begins to drink the solution. Whether 50 or 150 Gm. of dextrose is given makes little difference. The dose commonly employed is not less than 50 nor more than 100 Gm. for adults and 1 Gm. for each pound (0.5 Kg.) of body weight for children. Authorities agree that the patient should have fasted during the twelve or fourteen hours before the test is made, and that his diet must not have been restricted for at least three days beforehand. The majority of those experienced with the test place little emphasis on the peak of the blood sugar elevation that follows the ingestion of the dextrose in thirty to sixty minutes. They regard as more important diagnostically the rate of return of the blood sugar level to the normal range of fasting values (70 to 120 mg. per hundred cubic centimeters). The peak when the tolerance is normal rarely exceeds 180 mg. and rarely is accompanied by glycosuria. The return of the blood sugar level to the normal range of fasting values occurs between the second and the third hour. The peak in diabetes is attained later than the hour period and the return is retarded. Glycosuria accompanies the elevated blood sugar values.

Abnormal Responses; Not Diabetes.—Even a high peak which is accompanied by excretion of sugar in the urine is not considered diagnostic of diabetes mellitus when the blood sugar level returns to the range of normal fasting values within two hours. A response of this type is occasionally observed in hyperthyroidism; it also may be seen in patients who have undergone gastrectomy. It has been called the lag or storage type of response, but probably is explained on the basis of an increased rate of absorption of the dextrose.

A response of the sugar level of the blood which is normal in its pattern but is accompanied by glycosuria

is interpreted as renal glycosuria. This is a benign condition dependent on a lowered glucose threshold in the kidneys. The amount of sugar in the urine will vary with the diet. It also varies from case to case with the degree of depression of the threshold. A threshold lower than the level of blood sugar during fasting permits continuous glycosuria. One higher than the fasting level but lower than the normal threshold is accompanied by discontinuous or cyclic glycosuria, the sugar appearing only after food is taken.

The renal threshold is depressed in pregnancy. This indeed is the explanation of most instances of the so-called melituria of pregnancy. The sugar excreted is dextrose, not lactose, as is frequently supposed. Lactosuria occurs uncommonly until lactation has begun.

The renal threshold usually is normal in diabetes mellitus but occasionally may be depressed. Sugar then will be excreted even when the treatment of the diabetes with diet or insulin or both is adequate in all respects. The diabetes in patients with this abnormality is difficult to treat, for the reason that tests of the urine of these patients serve imperfectly as guides to the desirable dosages of insulin.

Pseudodiabetic Responses.—The same conditions which may elevate the fasting level of the blood sugar of normal persons modify the response of the blood sugar level in the glucose tolerance test. They include acute or chronic sepsis, physical injury, other endocrine diseases, especially hyperthyroidism, hyperpituitarism or active adrenocortical tumors, coronary occlusions, diseases of the liver, some encephalopathies, advanced chronic nephritis and muscular dystrophies. Furthermore, if a diabetic type of response is to be interpreted correctly the patient must not recently have engaged in unusual physical exertion or have taken alcohol or any drug, nor must he have been subjected to starvation, to a diet restricted in carbohydrate or to any recent emotional excitement. Tobacco smoking or chewing immediately before or during the test period will elevate blood sugar values, and apprehension over the venipunctures required by the test may provoke a diabetic type of response in some adults, but especially in young children.

In other words, tests for dextrose tolerance, if they are to give reliable results, must be made only under strictly basal (standard) conditions, and when any disease is present other than the suspected diabetes a positive response must be interpreted with caution. In the presence of another disease a diagnosis based exclusively on the results of a dextrose tolerance test can be no more positive than "diabetes suspected," but in that case other examinations should be made later and the patient should remain under the supervision of his physician until the suspicion is removed. True diabetes persists, so that in time a decision almost always can be reached, either on the basis of subsequent tests or as a result of the development of conspicuous symptoms. A diabetic-like response to the tolerance test is conclusive evidence of the presence of diabetes only in the absence of any other cause for disturbed carbohydrate metabolism.

DIABETIC SURVEYS

It is not to be doubted that many incipient cases of diabetes long remain unrecognized. Therefore knowledge as to the incidence of this disease can only

be obtained by satisfactory surveys and examination of all persons not previously diagnosed as diabetic. For such examinations some type of screening is required which involves a minimum of time and inconvenience for the persons examined. It might be wise to meet this problem by adopting a suggestion based on the opinion of many experts; namely, that if only one blood sample is available no other single determination of blood sugar is as useful as the one obtained two hours after the oral administration of a standard dose of dextrose. The briefest possible history also would be necessary because interpretation of a borderline two hour blood sugar value should properly be more severe when the person has a history of diabetes in his family.

The suggestion then would be to instruct examinees to eat freely of carbohydrate for three days and present themselves before the morning meal for testing, to give 50 Gm. of dextrose previously dissolved in 250 cc. of water flavored with citric acid and chilled and to secure after two hours a sample of arterial—that is, capillary—blood from finger or ear.

While there is advantage in use of venous blood in the type of dextrose tolerance test described before, British clinicians long have made their tolerance tests by using arterial blood. This is preferable in survey work, especially since micromethods are available so that a single drop of blood suffices for a satisfactory determination of sugar. The peak of the blood sugar response is higher when arterial blood is used than it is when venous blood is employed, but for the purposes of a survey we are not concerned with peak values and at two hours the differences between the sugar level in arterial and venous blood has disappeared. Therefore a value of 120 mg. or less could be taken as excluding diabetes, and one above that value would mean that the patient is a diabetic suspect. The procedure would, I think, pick out nearly all the persons having diabetes, although with them would be included a small group who did not have it. However, the positive but doubtful reactors could be subjected to more careful study afterward. For them I would resort to subsequent repeated observations until a diagnosis could be definitely established.

Less reliable for screening purposes would be a blood sugar determination obtained an hour after the morning meal, with this meal made rich in sweets and other carbohydrates. A blood sugar value of 170 mg. per hundred cubic centimeters would then represent the dividing point between persons who do not have diabetes and diabetic suspects.

Least reliable would be dependence on examination of the urine, although initial screening might be accomplished by testing urine collected after a breakfast which was rich in sweets and other carbohydrates. This would miss some diabetic persons, that is, those who had been on restricted diets earlier, but a brief history might suffice to pick up most of them. It would, of course, include many persons who were not truly diabetic, especially those with renal glycosuria. However, if the criterion adopted was a urine with not less than 1 per cent of reducing substance expressed as dextrose, most instances of melituria from sugars other than dextrose would be excluded.

The importance of early detection of diabetes cannot be overemphasized. Treatment now is usually postponed beyond the time when much restoration of

pancreatic island function can be expected. Intensive management of diabetes offers greatest promise when it can be instituted at the very onset of the disease. However, this involves detecting the disease in its incipience, which rarely has been possible. For this reason all health examinations should include some screening tests for diabetes with a careful follow-up of the diabetic suspects which they disclose. An examination such as this made every year in all schools, college and other institutions, also in all business firms and factories, would contribute greatly to the public health. For this reason also the present active interest of the United States Public Health Service in undertaking diabetic surveys of communities, as in Oxford, Mass., and in Florida, should receive all possible support from practitioners of medicine and specialists in diabetes.

SUMMARY

The diagnosis of diabetes has been discussed with special reference to the significance of positive reactions for sugar in the urine, elevated blood sugar values and the oral dextrose tolerance test. The tolerance test can lead to error unless pseudodiabetic responses are recognized for what they are and the test is made under strictly basal (standard) conditions. Procedure for discovering, by survey, previously unrecognized diabetes also has been considered.

MEDICAL AND SURGICAL VASCULAR COMPLICATIONS OF DIABETES

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The term complication as employed in reference to a chronic disease is commonly used to refer to an associated disease as well as to a condition more directly the result, per se, of the primary condition.

In diabetes, a vascular complication, or associated vascular disease, is considered, as to degree at least, to be the direct result of the disturbed metabolic state, or greatly aggravated by it in both tempo and time.

Many pathologic conditions observed in the diabetic person are most favorably influenced through our ability to control the diabetes. Thus, for example, the person with controlled diabetes is less susceptible to infection and acidosis than the one with uncontrolled diabetes. Surgical procedures, acute and elective, trauma, neoplastic disease and even pregnancy—this latter if especially approached—do not present to the surgeon and internist a more formidable problem in the diabetic person than in the nondiabetic.

Premature vascular disease, with its interference with adequate circulation, does not seem to be so directly influenced in a favorable direction by good diabetic control alone. Since not all persons with diabetes over a period of years of diabetes contract premature and serious vascular damage, and since some persons with well controlled diabetes do contract early and serious vascular disease, perhaps one is justified in the following reasoning. Either some persons with diabetes are predestined to early vascular disease through heredity, and diabetes only aggravates this predisposition, or

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there is associated in a varying degree with diabetes, and more frequently with poorly controlled diabetes, a disturbance of fat metabolism which is in itself responsible for the vascular damage. At present our knowledge of the disturbed metabolism of diabetes is so limited, although it is currently rapidly increasing, that much of such reasoning is necessarily without basis of fact.

The major part of our attention to vascular disease in the diabetic person must be given to prevention. Limited by our present knowledge, we are confined as follows in this respect.

Many statistics show that vascular disease has a distinctly lower incidence in the presence of well controlled diabetes. Statistics to the contrary usually err because they are based on deficient records or too short periods of observation. Many of us have in our files case records of diabetes of twenty to twenty-five years' duration and over, in which it is impossible even by the most detailed study to demonstrate any evidence of vascular disease. There is, however, considerable evidence to indicate that fat should not be employed in the diet beyond that amount needed to supply adequate calories while prescribing liberal but subnormal amounts of carbohydrates. Also there is considerable evidence to support the theory that fats low in cholesterol are safest. As to protein, there is considerable evidence to justify the opinion that protein may be allowed without disadvantage, and frequently with distinct advantage, more liberally than has been done by many authorities in the past.

Improved effort to prevent or delay vascular damage in the future must follow amplification of our present knowledge of the disturbed metabolism.

Once vascular disease has developed to a degree that interferes with normal function, the problem in the person with diabetes, except for the necessity for control of the diabetes, is rather similar to that in the non-diabetic person.

In the diabetic patient vascular disease is most apt to be cardiovascular renal disease. Myocardial infarction, secondary to disease of the coronary arteries, is the major cause of death among persons with diabetes. Cerebrovascular accidents and vascular renal disease vie for second place. In the juvenile group renal disease is pressing for first place in the list of causes of death. Here we see most often the characteristic lesion of intercapillary glomerular sclerosis.

Gangrene of the lower extremities is a most frequent complication not uncommonly resulting in crippling amputation. Although it may occur in the absence of severe vascular damage, it is the degree of vascular damage that most frequently determines the susceptibility to, and the course of, infection and trauma in this area. Therefore great emphasis must continuously be placed on care of the feet, thus preventing as far as possible this serious complication. The greater the degree of vascular damage, the greater is the need for painstaking preventive effort and for adequate attention to minor lesions.

Hypertension is so commonly found associated with diabetes that the finding is almost expected past middle life. Among young persons with diabetes of over twenty years' duration, a national authority recently found hypertension present in 40 per cent. The hypertension associated with diabetes, in many instances at least, may or may not be the type of hypertension com-

monly classified as essential. The distinctly high incidence, however, is not denied.

Retinitis is probably the most discouraging vascular complication. Perhaps this is so discouraging because the incidence is so high among young persons. Dr. Priscilla White has recently found that 85 per cent of young persons with diabetes of over twenty years' duration showed evidence of retinitis. Other studies have indicated that the incidence is even more nearly universal than this figure. Although the incidence is distinctly lower among persons with continuously well controlled diabetes, there is an undeniable relationship between retinitis and duration of the diabetes. Early retinal damage may be slowed or even checked in its progress by the institution or reinstitution of exacting diabetic control. At present however, all other measures have proved to be of no assistance. However, reports of recent observations of the effects of rutin and hesperidine are promising in a somewhat limited percentage of the groups studied.

Vascular complications in the diabetic person are most often medical. The surgeon is relatively infrequently called on to assist, except when the lesion exists in a lower extremity or the eye. Antibiotics and the newer bactericidal drugs, especially the sulfonamide group, have proved a boon to the diabetic person. They have made it possible to bring infections under control quickly. They have lowered the mortality of elective surgical procedures. In the presence of vascular disease they have made it possible to carry out more conservative surgical procedures on the extremities than would have been attempted previously. For example, transmetatarsal amputation has not infrequently been successful in recent years with their assistance, whereas formerly only higher amputation would have been attempted.

Except for proper control of the diabetes, medical measures are largely directed at symptomatic relief, or at best are only retarding in their influence. Vascular antispasmodics of all types may be distinctly so classified. Spasm is not the controlling factor in vascular disease as it is seen in the diabetic person. For this same reason drugs or surgical procedures which produce sympathetic block at various levels produce only temporary relief.

Vascular disease among that group of diabetic persons with onset in childhood is especially disturbing because twenty to twenty-five years ago, shortly after the advent of insulin, our highest hopes for prevention of vascular disease rested in this group. The Joslin group has recently pointed out, however, that our current statistics in this regard are probably the worst that we will ever see, since these records being studied are those of diabetic persons who for not more than half of their diabetic life have had the advantage of good diabetic control.

At present there is a definite relationship between the incidence and degree of vascular disease in the person with diabetes, and the duration of the disease. At least until we know more of the facts regarding the total metabolic disturbance in diabetes, we must place our greatest confidence in our ability to maintain normoglycemia and aglycosuria in the presence of an adequate nutritional intake. We must diligently apply in a practical manner what knowledge we have today, for even tomorrow further light of great degree may be thrown on our problem. Let us not, either as physicians through failure to apply present accepted

therapeutic principles, or as patients through failure to give full cooperation, fail to maintain a physical status which will permit the patient to take advantage of the newer knowledge of tomorrow. As biochemists and physiologists slowly but progressively unfold further and further the manifold mysteries of metabolism, we will come to understand more thoroughly the problem of diabetes and be able to base on this knowledge a more effective therapy.

INSULIN AND DIET

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My colleagues and I, in common with all others dealing with diabetes, have long been disturbed by the increasing incidence of severe degenerative lesions in our patients. It appeared to us that data obtainable thus far from human beings were unsatisfactory as an aid in solving this problem, because of the impossibility of keeping such patients under sufficiently controlled conditions for sufficiently long periods of time. It seemed a reasonable expectation that if we could collect a series of diabetic animals and maintain them with known amounts of glycosuria for years, perhaps for the duration of their lives, observing the changes in the blood and tissues from time to time, we might gain more information about the mechanism by which the degenerative lesions occur than has been possible in studies of clinical material.

We have proposed, and indeed have begun, to render a good many dogs diabetic with alloxan, perhaps 100 if we can, and to divide them into two groups, one of which will be kept as nearly free of glycosuria as possible with insulin, the other being allowed to run far out of control. Half of each group will be on a high carbohydrate-low fat diet and half on a low carbohydrate-high fat diet in an effort to determine whether hyperglycemia and hypercholesteremia favor the development of degenerative complications.

Fundamental in any consideration of diet and insulin in the treatment of diabetes is the question of what we as physicians are trying to accomplish. Do we want to control glycosuria as completely as possible, consistent with the avoidance of hypoglycemia? Or are we to be content with allowing patients to eat much as they please, excreting large amounts of sugar in the urine, as long as they do not have thirst and polyuria, and taking only enough insulin to avoid ketosis?

It is self evident, I trust, that if the latter point of view is adopted, any discussion of diet is meaningless. There is no diet, in the usual sense, and the problem of insulin becomes negligible.

My personal views on the subject may be summarized as follows: If no one has proved that persistent hyperglycemia is harmful (and I may say that there is excellent evidence of harm in animals), neither has any one, including the advocates of the free diet, proved that it is not. Until such proof is at hand, it will be unwise and unsafe to abandon attempts to keep the blood sugar reasonably close to normal. I will be the first to admit that in the young unstable diabetic person that goal is often difficult, if not impossible, of

attainment without running the risk of a more immediate and serious danger, that of severe hypoglycemic reactions. In such situations one is forced to compromise with principles. The dose of insulin must be adjusted so that hypoglycemia never occurs, and this, in the unstable cases, means inevitably, though none the less regrettably, considerable glycosuria some of the time.

Important aspects of a diabetic diet are:

1. Establishment and maintenance of normal nutrition
 - (a) If patient is too fat, reduce him
 - (b) If patient is too lean, fatten him, slowly
2. Calories (these are considered before carbohydrate, protein and fat): Basal, 20 to 25 calories per kilogram (10 per pound) of standard weight
 - Add 30 per cent for sedentary workers
 - Add 50 per cent for more active persons
 - Add 100 per cent or more for laborers
3. Protein (1 Gm. per kilogram [$\frac{1}{2}$ Gm. per pound] of body weight)
4. Carbohydrate and fat (one-half the remaining calories [total calories minus protein calories] in each)
 - Low carbohydrate diet only for new patients not already receiving insulin
5. Minerals and vitamins

A diet for an office worker (moderate activity) whose both actual and ideal weights are 70 Kg. might be calculated as follows:

Body weight	70 Kg.
Basal caloric requirement (70×20 calories)....	1,400 cal.
Add 50 per cent for moderate activity.....	700 cal.
Total caloric requirement.....	2,100 cal.
Protein allowance (1 Gm. per kilogram).....	70 Gm.
Protein calories (70×4 calories).....	280 cal.
Balance to be supplied by carbohydrate and fat..	1,820 cal.
Carbohydrate calories ($1,820 \div 2$).....	910
Carbohydrate grams ($910 \div 4$).....	228
Fat calories ($1,820 \div 2$).....	910
Fat ($910 \div 9$)	110 Gm.
Final diet prescription	
Carbohydrate	228 Gm.
Proteins	70 Gm.
Fat	110 Gm.

Carbohydrate may be distributed, percentage wise, between the three principal meals and a bedtime feeding in some such proportion as 20-35-35-10.

It is necessary to emphasize to the patient the importance of the quantities as well as the kinds of food, the constancy of carbohydrate intake from day to day and the ability to make simple substitutions to avoid monotony and yet keep constancy.

Four types of insulin are now available: soluble or "regular,"¹ protamine zinc, globin and mixtures of these prepared by the physician or the patient.

The figure shows the various blood sugar time curves obtained with these different forms of insulin. All of the curves were obtained for the same diabetic patient on different days, with a constant regimen which consisted of the patient's receiving feedings of milk every two hours throughout the twenty-four hour period. This was to insure that his state of hydration and nutrition would be constant and unvarying throughout the observations. On one of the days he was given a dose of 35 units of protamine zinc insulin, and his blood sugar went up a little for almost four hours, then gradually went down, until at the end of twenty-four hours it had reached its lowest point. In contrast to protamine zinc insulin, regular or crystalline insulin, given in exactly the same dose, reached its peak of activity at six hours and gradually tapered off, so that at the end of fourteen or sixteen hours the level of blood sugar had returned to its initial

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1. The manufacture of crystalline insulin (solution of zinc insulin crystals) is being discontinued.

point. If regular insulin and protamine zinc insulin are combined, are mixed in the syringe in the proportion of 2 parts of regular to 1 of protamine zinc insulin, one secures a curve which is, on the whole, intermediate between that of protamine zinc insulin and that of crystalline or regular insulin alone. It is interesting that this type of curve closely parallels the curve produced by globin insulin in a similar total dose.¹

These four types of curves, then, can be taken to characterize the action pattern of the different types of insulin now in common use.

With reference to protamine zinc insulin, it should be emphasized that the curve shown in the figure is that which is obtained only after a single test dose of the substance.

Protamine zinc insulin, when given daily, at twenty-four hour intervals, has an entirely different type of activity.

Soon after the discovery of protamine zinc insulin, it began to appear from clinical results that its activity was relatively constant throughout the twenty-four

ent that the action of protamine zinc insulin is the same, whether it is given in the morning or in the evening.

Now, in order to establish that if a short-lasting insulin were given in the morning as against the evening the curves would be different, other curves were obtained. Regular insulin was now given for some time in the evening, with one type of curve resulting. Regular insulin was then given in the morning, with the other type of curve resulting. Finally, the patient was given no insulin, and a curve was obtained which was similar in shape to the curves produced by protamine zinc insulin. This constitutes further evidence that the activity of the protamine zinc insulin is a relatively constant matter. It simply lowers the general level of the blood sugar.

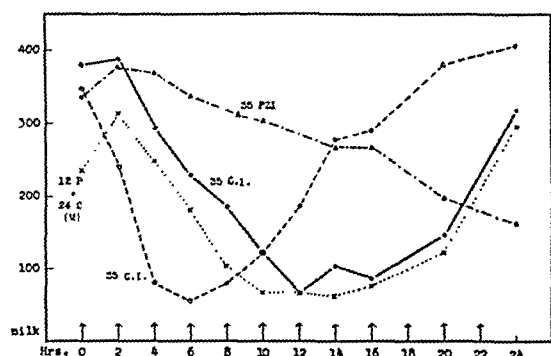
If protamine zinc insulin does, in truth, act fairly constantly throughout twenty-four hours, it helps one to understand why it is not able to take care of the food intake in persons with severe diabetes, in whom the pancreas is unable to produce a little insulin in response to the ingestion of food. It explains, on the other hand, why protamine zinc insulin is effective in persons with mild diabetes, who have a good pancreatic reserve.

These differences in the effectiveness of protamine zinc insulin from one type of patient to another are illustrated by curves obtained for persons with diabetes of varying degrees of severity before and after partaking of food. It is apparent that in each case protamine zinc insulin controls the fasting blood sugar very well. The postprandial blood sugar, however, is well controlled only in the milder cases, and the severer the diabetes the less successful is this preparation in returning the blood sugar to normal two or three hours after a meal. Such failure is most pronounced in the most severely diabetic subject we know of, the totally depancreatized dog.

In patients with severe diabetes, therefore, protamine zinc insulin must be supplemented by a quickly acting insulin if the blood sugar after meals is to be kept within reasonable limits. This type of insulin (regular or crystalline) is given at the same time as the protamine zinc insulin, before breakfast, and may be administered either separately or as a mixture. It must not be forgotten, however, that the effect of a dose of regular insulin given separately is different from its effect when mixed with protamine zinc insulin. In the latter case a considerable proportion of the regular insulin is converted to the protamine complex by the excess of protamine present.

Dr. Colwell of Chicago, Dr. Peck of Indianapolis, Dr. McBride of St. Louis and Dr. Wilder at the Mayo Clinic have been actively concerned in the use of insulin mixtures in the syringe. One of the advantages is that, in place of having to give two injections of insulin to the severely diabetic patient, whose disease protamine zinc insulin alone will not control, one can add a quickly acting component to the mixture and accomplish about as much in one injection as could be accomplished in two separate injections of crystalline and protamine zinc insulin.

It has been observed by the majority of investigators that a mixture consisting of 2 parts of crystalline or regular insulin to 1 part of protamine zinc insulin fulfils the requirements well for the vast majority of diabetic patients, perhaps 80 or 85 per cent. One must not, however, forget the remaining 15 per



Blood sugar time curves for a diabetic patient obtained with different forms of insulin (Ricketts, H. T.: Certain Aspects of the Newer Insulins, Illinois M. J. 87: 133 [March] 1945). The vertical column of figures at the left shows the number of milligrams of sugar in the blood per hundred cubic centimeters.

hour period. To put this probability to the test, we devised the plan of giving protamine zinc insulin to a diabetic patient first in the morning for several days, testing his blood sugar four times each day, averaging the results and plotting them as a curve. We then gave it to him in the evening for several days, getting a similar series of figures and finally checking again with another morning series represented by still another curve.

It was reasoned that, if protamine zinc insulin had a fairly constant activity throughout the twenty-four hours, then the shape of the blood sugar curve should not be altered, no matter whether the patient received his insulin in the morning or in the evening; the curve ought to be reproducible. If the activity of protamine were not constant, if there were, in fact, a period of maximum activity and then waning activity, as there is with a short-lasting insulin, then it should make a good deal of difference whether one gave the protamine zinc insulin in the morning or in the evening.

It will be apparent, I think (from the curve) that there is little difference except at one point between the results of morning and of evening administration of protamine zinc insulin.

A similar type of observation was made on another patient. Again, the averages were plotted of several days' determination, not of a single day; it was appar-

20 per cent, in whom a different proportion of regular to protamine zinc insulin may be necessary. The advantage of using mixtures is precisely that one can change the proportion of one to the other, as the requirements vary from patient to patient or in the same patient from one time to another.

The diagrammatic representation of Colwell's data indicates the action of regular insulin, protamine zinc insulin and 2 to 1 crystalline to protamine zinc insulin mixture, the action of which lasts less long than that of protamine zinc insulin and begins less abruptly than that of regular insulin. The action is also shown for a 3 to 1 mixture of crystalline to protamine zinc insulin. It must be apparent that, as one increases the proportion of crystalline insulin in a mixture of crystalline and protamine zinc insulin, the onset of action of the insulin is accelerated, with less duration of action.

The principal point, to be made is that by altering the proportion of one type of insulin to the other, one can obtain a type of compound to suit the individual needs in the vast majority of instances.

If air is not injected into the bottle at the time the insulin is withdrawn a vacuum is produced which makes manipulation difficult. Therefore, one ought to inject into the bottle the same number of units of air, so to speak, as of insulin withdrawn from the bottle.

A comparison of globin insulin with other forms of insulin is illustrated in a young girl with relatively severe diabetes. Crystalline insulin given morning and night (12 units each time) led to an extremely high level of blood sugar on arising, which is characteristic of severe diabetes in young persons. The crystalline insulin kept on working all day, and the low point showed that there was a tremendous change in the level of the blood sugar.

Globin insulin given in the same total dosage produced considerably better results and in this case, obviously, had an action which lasted more than twenty-four hours, or at least twenty-four hours, because the fasting blood sugar was much better than with two doses of crystalline insulin per day (breakfast and supper).

A comparison was made of the effect of globin insulin with crystalline insulin alone in a patient with milder diabetes. From the curve for globin insulin and the curve for crystalline insulin, it was apparent that the crystalline insulin, a short-lasting insulin, does a better job in this particular patient than did the globin type. It is not always the case.

In another patient globin insulin obviously failed to have a twenty-four hour effect. Any variation from marketed protamine zinc insulin should have, in my opinion, the minimum requirements of full twenty-four hour activity in all patients, not in some but in all. Unless that criterion is fulfilled, there is little excuse for adopting a long-lasting insulin other than protamine zinc insulin.

Efforts are under way to secure a stable preparation with a shorter duration of activity than that of protamine zinc insulin and a quicker onset of action, and the preparations which we have tried so far have all had twenty-four hour activity in all patients. That, I think, is important. Globin insulin does not have twenty-four hour activity in many patients, and that is one reason that I do not advocate its routine use.

The practical application of the technic of adjusting the patients to diet and insulin can be represented by charts. In the patient with mild diabetes, our custom,

if we have not observed him before, is to give him a diet containing 100 Gm. of carbohydrate distributed equally among the three meals. If, with such a regimen, the patient returns in a week with a record of urinary tests showing that the condition was not controlled with diet alone, a small dose of protamine zinc insulin is prescribed, and since insulin must be taken anyway, the carbohydrate intake is increased to a more nearly normal figure. With mild diabetes, such a maneuver is almost uniformly successful.

If the diabetes is severe, there is a different problem. Treatment of the previously untreated diabetic person is started with 100 Gm. of carbohydrate per day. If at the end of a week it is obvious that insulin is needed, the diet is changed to include 150 or 200 Gm. of carbohydrate. He is given 10 to 20 units of protamine zinc insulin. Protamine zinc insulin in adequate amounts will usually be observed to control the fasting urine specimen.

When one gives the same total dosage in a mixture of 2 to 1, one is likely to effect considerable improvement in results of urinary tests, which can be still further improved, perhaps, by juggling the amounts of carbohydrate among the various meals.

I would like to end on the note with which I began, that my colleagues and I are not yet ready to abandon the goal of careful control of the blood sugar in the treatment of diabetic patients.

ABSTRACT OF DISCUSSION

ON PAPERS BY DRS. WILDER, PALMER AND RICKETTS

QUESTION: Why is it they have so many more men with diabetes at the Mayo Clinic than they do women?

DR. WILDER: There is about an equal number of men and women in the Mayo Clinic. Most statistics on diabetic deaths indicate the presence of more women than men. Most diabetic surveys or at least most complications of diabetic incidence have indicated more women than men. Why our figures were different from those of almost every one else has been a puzzle to us for many years. This has been going on year after year for the last twenty years, at least, with, I will say, 51 or 52 per cent of men and 48 or 49 per cent of women, rather than the reverse in other places. We have felt that perhaps we were getting more accurate figures on sex incidence than Dr. Joslin was, because persons that we see do not come to us because they have diabetes. We have no Dr. Joslin in the Mayo Clinic. They come for everything else under the sun. They are all examined carefully, no matter what the matter is with them. Sugar, when it is found, is followed up by examinations of blood. That has given us our figures. I am interested that Dr. Wilkerson's figures at Oxford, Mass., where, again, everybody was examined, not only those who happened to come because they had diabetes, show a close incidence of men and women. It is true that women outnumber the men a little, but the degree is so small that I wonder whether it really has statistical significance. Likewise in Stockholm, where they recently had a survey of the incidence of diabetes, based on applications for special rations during the war—there was an incentive for these men to present themselves for examination—the incidence of men in most of the decades exceeded that of the women, just as it does with us.

QUESTION: How does the intravenous glucose tolerance test compare with the oral?

DR. WILDER: In the intravenous test one gets a sharper rise, of course. I imagine it is equally useful, provided that one had a mass of experience with it so as to be able to compare the finding in an individual case with the general finding.

QUESTION: Do you use oral glucose generally?

DR. WILDER: We use the oral test exclusively.

QUESTION: Do you consider the "clinitest" reliable for patients to depend on for urine test?

DR. WILDER: We are using the "clinitest" right along in most patients. We teach them the Benedict qualitative test and the "clinitest." They must be urged to keep these tablets from deteriorating, by keeping the bottle tightly closed. When they deteriorate, the patients may be led astray and think that they have different amounts of sugar than they have. However, mistakes also are made with the Benedict test. I had 1 patient who died as a result of diabetic acidosis, led astray by buying Benedict's quantitative solution rather than Benedict's qualitative solution and failing to get a reaction that he recognized as positive.

QUESTION: Please explain how a drop of arterial blood is used in determining diabetes.

DR. E. P. JOSLIN, Boston: Mrs. Leech in our exhibit is determining blood sugars by taking a drop of blood from the ear. There was one thing which I could tell Mrs. Leech today that encouraged her. One of the men formerly working with us, and now in a fairly large city, the other day saw a patient evidently going into acidosis, as he thought. No opportunities for determining blood sugar were available, even in this large city. The physician happened to remember Mrs. Leech's test, carried it out himself, and determined the patient's blood sugar, 600 mg., and the patient came out of coma.

QUESTION: What method of determination of blood sugar do you suggest as being simple but accurate for the doctor who must do his own office blood sugar determinations?

DR. WILDER: I think that this technic which Mrs. Leech is developing is going to be the answer to that question.

DR. HUGH L. C. WILKERSON, Boston: We are conducting a program in diabetes control in two parts of the country, one in Brookline, Mass., where we are doing case finding and general educational work with the public, and also some educational work with diabetic patients. In Jacksonville, Fla., we have a program in diabetes, not just a survey, where we are doing case finding and education of the patient. In particular, we are holding classes for diabetic patients referred to the health department by practicing physicians for education. These educational classes are conducted by nurses and nutritionists who have been specially trained in diabetes. We have a series of lectures given by a doctor not in practice, a health officer who has had considerable training especially in diabetes. We also have a register of diabetic patients, now more than 800 in number, which has been compiled by the practicing physicians referring their patients to us for contact purposes, to get the names of their relatives and for other purposes of education.

We find that we are getting many more than 2 per cent of the relatives of diabetic patients who actually have diabetes. More than 1 per cent of them have not formerly known that they had any signs or symptoms of the disease. In addition to that, we are doing research work on simplified procedures for diagnosis. We are also preparing for the use of the general practitioner and for health departments, valuable, simple educational material.

DR. JOSLIN: Dr. Palmer brought out what has been emphasized by Dr. McCullagh and others today, that the adequate treatment of diabetes, the aggressive treatment of it, results in a smaller number of complications.

QUESTION: Will you discuss the intravenous use of ether in diabetic gangrene?

DR. PALMER: I know Dr. Katz of New Orleans, and I know he is enthusiastic about it. I have talked to many men who have used it. If one can follow the patients, it is a temporizing measure and may be helpful. I would not condemn it, and I do not encourage its extensive use.

QUESTION: Do you use heat or cold in wet diabetic gangrene, while using antibiotics before resorting to surgery?

DR. PALMER: You should be careful of heat in all cases of diabetes. In the past we have used more heat than at present. I think we try to maintain not cold temperatures. I do not apply refrigeration at all in the attempt to control sepsis from an extremity, unless I were going to use that as the anesthetic.

DR. PALMER: We have used considerable rutin. I cannot be too enthusiastic about it; it is all right to use it.

DR. JOSLIN: About the rutin, Dr. Dodger recently, in his careful article in *THE JOURNAL*, was rather pessimistic. I think our group is not so pessimistic as that. They are rather open-minded. Dr. White feels that with the children who have used rutin the progress of the disease in the eyes has been less rapid. I would like Dr. Wilder to say a word on rutin.

DR. WILDER: We have used it on a good many cases, with results that we cannot interpret. There are some cases of untreated retinitis in diabetes that get spontaneously better. Those cases that have gotten better under the administration of rutin may have deceived us. We have at present an impression—it is nothing more or less than a clinician's impression—that some of these cases have been arrested, their progress delayed by the use of rutin. This is exactly the same impression your associates apparently have in Boston.

QUESTION: Do you plan your diets at all as to the content of cholesterol?

DR. RICKETTS: We do not. Perhaps we should but we have not paid much attention to that. One thing that makes me say so is the report from Rabinowitz' laboratory and clinic in Montreal, in which he had patients, some on high cholesterol and some on low cholesterol diets, and the difference between the blood cholesterol in the two groups was slight. I have never been convinced that it was real or important.

QUESTION: Will you kindly repeat your method of determining the amounts of protein, carbohydrate and fat in the diet?

DR. RICKETTS: One gives 1 Gm. of protein per kilogram or approximately that. If the total caloric requirement is 2,000 calories, one gives, then, 75 Gm. of protein to a man weighing 75 Kg. He supplies in that protein 300 calories, 4 times 75. Subtracting 300 from the 2,000, which we allow, leaves 1,700 calories to be supplied in protein and fat. Of this 1,700 calories, 850 ought to come from carbohydrate and 850 ought to come from fat. If the carbohydrate calories are to be 850, that is equivalent to approximately 210 Gm. of carbohydrate in the diet and 850 calories of fat is equivalent, roughly, to 90 Gm. of fat.

QUESTION: Do you feel it necessary to hospitalize a patient while stabilizing on diet and insulin?

DR. RICKETTS: Ordinarily not.

DR. JOSLIN: It seems to me that we are treating more and more in the office, just as the surgeons more and more are doing preliminary work before they send the patients to the hospital. Really, we have to thank the Mayo Clinic for driving that home, because they have all sorts of dining rooms and they have treated many diabetic persons that way. We know that they do save their hospital beds. We learned a great deal.

QUESTION: At what intervals during the day do you do a quantitative determination of sugar in the urine?

DR. WILDER: In our clinic we do quantitative tests only on twenty-four hour collections and that infrequently. We feel the qualitative test is sufficient for fractions during the day.

QUESTION: How would you aggressively treat a patient with mild diabetes who has a fasting blood sugar of 130 to 140 mg., with no symptoms?

DR. WILDER: It would depend a good deal on the patient, of course. If it is an overweight person, probably the best treatment for him would be a diet without any insulin at all. He probably can be treated with diet, without any insulin, under any circumstances. If it is an early case, I would be much more inclined to be rigid in my management than if it is a later case, because the earlier cases are the cases in which a rigid management can be expected to do some good. After diabetes has lasted two or three years, it has reached a degree of severity that it is likely to continue from then on throughout life. It will be aggravated by infections but it will come back after the infection is over to about the degree of severity it had before. It was just before I left home that I saw a woman who has had diabetes thirty years. She was 50 years old, was only 20 when it started. Our patients starting diabetes at 20, with the typical triad of symptoms, nearly all require insulin. This woman had not used insulin all her life; she had had diabetes thirty years and still was what we call a grade 2 diabetic. When she overstepped the diet, her blood sugar went up to 300 to 400 mg. When on careful diet, she was all right.

Special Article

CANCER OF KIDNEYS, ADRENALS AND TESTES

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NEW YORK

This article is the sixteenth and last of a series to be published by the American Medical Association in cooperation with the American Cancer Society. The series is designed to aid in the early diagnosis of cancer and thereby to gain more effective results in treatment.

CANCER OF THE KIDNEY

In two periods of life cancer of the kidney occurs, in infancy and in aging adult life. In infancy occurs one of the more frequent cancers of childhood, Wilms' tumor or infantile embryoma. This is a silent tumor and is highly malignant, with a serious and impressive record of fatal termination. More frequently, there occur in middle-aged or in elderly persons the various epithelial carcinomas of the kidney which are often silent until they reach considerable size and usually show their presence by blood in the urine. The early recognition of renal cancer in both these age groups is a problem for the medical practitioner, because by early surgical removal of the affected kidney lies the correction of an otherwise fatal course of the disease.

Carcinoma of the kidney ranks third in frequency among the tumors of the urogenital system, following carcinoma of the bladder and of the prostate. A few rare tumors of the kidney, not epithelial in origin, such as fibrosarcoma and leiomyosarcoma arise from the renal capsule or pericapsular tissues. The usual cancer is one epithelial in origin, originating from the renal parenchyma or from the epithelial lining of the pelvis. The latter, a specialized epithelium, is in the lining of the ureter and bladder, and all the tumors arising from this specialized epithelium are of similar class, whether from renal pelvis, ureter or bladder. The tumors occurring from the renal parenchyma itself are specific tumors of that tissue.

The formation of the renal parenchyma is of two origins: (1) the part formed from the renal blastema is that part above the "connecting piece" in the system of Henle and (2) the portion below the connecting piece is from the wolffian system and actually is of the same embryologic origin as are the renal pelvis and the ureter. The separate origin of the two parts of the renal parenchyma would lead one to suspect that two different types of tumor cells would occur. Two different types of tumor cells do occur, one a clear cell and the other a granular cell. One or the other may be the predominant cell in a tumor, or sometimes a part may be of clear cells and another part of granular cells. There is, however, as yet no acceptable evidence as to the origin of either the clear cell or the granular cell except that they both are undoubtedly of renal origin. It is also true that clear cell carcinomas occur more frequently in the cortical areas and granular cell tumors more often in the medullary and corticomedullary areas. The clear cell carcinoma may originate from the renal blastema cell; its growth action to some degree suggests such origin, and the granular cell arising from the wolffian system resembles the infiltrating carcinoma of that system.

Small cortical adenomas of the kidney, entirely symptomless, are not infrequently found at operation or at autopsy. These small encapsulated adenomas are considered benign; they may be microscopic in size, and whether they play any part in the production of carcinoma of the kidney is uncertain.

The classification of renal tumors like tumors elsewhere has at times little agreement between clinicians and pathologists. Two recent studies of large series, one by Fite¹ and the other by Melicow,² have considerable classification in common. First, pathologists agree that most renal tumors are renal in origin and that the old term "hypernephroma" if used should be reserved for that small class of adrenal rest tumors.

The following simple classification of renal parenchymal tumors has been found most useful: (a) clear cell carcinoma; (b) granular-cell carcinoma (some tumors occur in which both types of cells occur without evidence as to which one was primary or secondary); both types of cell tumors may show alveolar, adenomatous, tubular, papillary or cystic formations, which are normal or abnormal anatomic architectural arrangements of renal cells; (c) true hypernephroma (adrenal rests); (d) tumors in solitary cysts; (e) multiple papillary adenoma or carcinoma in sclerotic tubular cysts, and (f) mixed forms, among which the carcinosarcoma of infants (Wilms' tumor) is the most frequent.

PARENCHYMAL RENAL CARCINOMA

Parenchymal renal carcinoma is a disease of middle age. In 182 successive cases it occurred in the following ages: 20 to 30 years, twice; 30 to 40 years, sixteen times; 40 to 50 years, forty-two times; 50 to 60 years, sixty-four times; 60 to 70 years, thirty-eight times, and 70 to 80 years, twenty times.

Carcinoma of the kidney occurs more frequently in the male, in the ratio of 3 to 1. In females when tumor occurs it has been most often subsequent to the menopause. The carcinoma occurs about equally on both sides, but has been more frequently operated upon on the right side. Inoperable tumors, due to size fixation or with metastases, occur more frequently on the left side. In the 182 cases mentioned, no operation having been performed because of pulmonary metastases in 24 cases, there were 20 cases with tumor of the left kidney and only 4 with right-sided tumor. A plausible reason assigned was that the deeper situation of the left kidney was more often associated with delayed recognition of the disease, as well as the fact that hematuria occurred more often with right-sided tumors than it did with tumors of the left kidney. Bilateral tumors are rare, occurring once in about 100 cases.

Symptoms.—The symptoms of parenchymal renal carcinoma are a triad of hematuria, pain in the flank and a mass in the flank.

Hematuria occurs in over 70 or 80 per cent of the cases; it presumes a vascular rupture in a well developed neoplasm and should be a late symptom of tumor growth. It is the most frequent and the most important symptom. It may be entirely painless, and sudden in its appearance, and it may spontaneously disappear, or the bleeding

1. Fite, G. L.: Classification of Tumors of the Kidney, Arch. Path. 39:37, (Jan.) 1945.

2. Melicow, M. M.: Classification of Renal Neoplasms: A Clinical and Pathological Study Based on One Hundred and Ninety Nine Cases, J. Urol. 51:333, 1944.

may last a variable time, then cease, and may or may not recur later. At times it may be associated with renal colic, and the patient may pass blood clots. The clots may be like ureter casts. The bleeding is apt to be total and the same throughout the urine until it ceases, to recur later. In some cases the bleeding may persist until corrected by surgery. There is nothing specific about the hematuria that separates renal bleeding from ureteral or vesical.

Pain may occur as a dull ache in the flank. It may be associated with hematuria. At times it may be severe, typical of renal colic, and then definitely associated with passage of blood clots. Continuous fixed pain in flank or back may be a symptom seen with large tumors.

A mass in the loin or a palpable mass in the renal region is frequently found at the time of the appearance of the hematuria. In almost 10 per cent of the cases the patient is conscious of the mass himself. In over 60 per cent of the cases presenting with hematuria, a renal mass was palpable on the first examination. This usually is felt bimanually and is associated on palpation with deep inspiration.

The three symptoms hematuria, pain in the flank and a palpable mass in the flank are frequently the only symptoms present in the early onset. Other symptoms may then follow. Urinary difficulties may arise due to a blood clot in the bladder, and since most of the patients are elderly men, coexistent prostatic hypertrophy may be present with urinary frequency and lessened stream.

Weakness and loss of weight become more frequent as the disease progresses. Often the weakness is present as an only symptom, and at times it seems to be directly associated with the specific tumor and not with metastases, as the weakness syndrome often disappears a few days after the tumor is removed surgically. Fever is not infrequently seen with renal carcinoma. In a few cases unexplained fever was the only presenting symptom. When fever occurs it has been attributed to intratumor hemorrhage and subsequent necrosis, and later often in such cases calcified deposits in the tumor are seen in roentgenograms.

When metastases occur, the symptoms are referable to the organ involved. Rarely the first symptom may be that of metastases. This may be seen with spontaneous fracture of a long bone or the finding of metastases in the lung by roentgen ray. Metastases are found in about 30 per cent of the cases when first seen on admission. About 50 per cent of these are seen in the lungs; about 20 per cent are in the bones. Metastases occur next in frequency in the liver and in the brain.

CLEAR CELL CARCINOMA

The clear cell carcinoma, the most frequent type of tumor seen, was formerly described as hypernephroma by Grawitz, and was supposed to be an adrenal tumor, but it is now generally accepted that it is entirely renal in origin. This tumor grows slowly, may or may not be partially encapsulated, projects as a mass out from the cortex or intrudes on the pelvis. The tumor is soft, with large spherical masses, yellow in color, vascular within and without the tumor, and it may remain local, growing slowly for a variable length of time. Years may pass before the tumor breaks through its barriers and spreads. When it does it may spread locally through the capsule or may form large thrombotic masses which protrude into the veins, at times into

the renal vein and vena cava, and which then appear as spherical metastases in the lungs. The most usual place of metastases with clear cell carcinoma has been in the capillaries of the lungs. This tumor also has a "selective tendency" to metastases

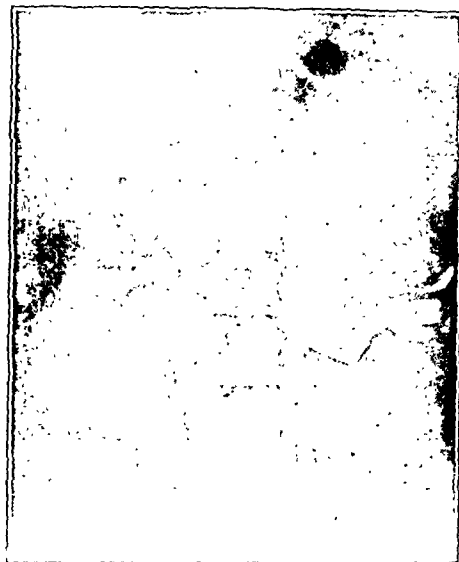


FIG. 1 (M.F.).—A retrograde pyelogram of a clear cell carcinoma of the left kidney. It shows that the tumor mass growing in the upper pole has elongated and twisted the upper calyces and obliterated part and has displaced the renal pelvis and lower part of the kidney downward.

to bone, long bones most often. The clear cell carcinoma is seen among an earlier age group than the granular cell carcinoma.

GRANULAR CELL CARCINOMA

The granular cell carcinoma, the next most frequent type of renal cancer seen, is a more rapidly growing and a more malignant carcinoma than the clear cell. It occurs more frequently in the older age group. It forms a hard solid contracting type of tumor much less vascular than the clear cell but, being more invasive, is more frequently seen with hematuria (80 to 90 per cent) and with pain. This tumor is often stony hard in the kidney and resembles the undifferentiated carcinomas elsewhere, extending by direct extension, by the lymphatics and by the blood stream. Metastatic involvement of preaortic lymph nodes and mediastinal nodes is not infrequently seen early with granular cell carcinoma.

Tumors occur in which both types of cells occur, a mixed cell type. Part of the tumor will be of large soft yellowish masses, but other portions will be hard, nodular and fixed. Examination will show clear cells in one and granular in the other. There has been no evidence as to which type may have been the primary, but these tumors in progress and in seriousness resemble more the granular cell tumor than the less malignant clear cell tumor.

From a consecutive series of 100 cases of all types of parenchymal tumors, the following symptoms occurred: hematuria, 85 cases; loss of weight, 60 cases; intermittent pain in the flank, 30 cases; fixed pain in the back, 22 cases; a palpable tumor (noted by the examiner), 46 cases; a mass as a complaint, 8 cases; weakness or fatigue, 22 cases; difficulties in voiding urine, 12 cases, and fever, 9 cases.

The finding of varicocele on the same side is not infrequent. If pronounced, it is often found to be

associated with an obstructive thrombotic tumor mass in the renal vein.

DIAGNOSIS

It is now an accepted axiom that all cases of hematuria require a urologic investigation as to the source of the hematuria and its cause. Since



Fig. 2 (M.G.).—Retrograde pyelograms in a case of granular cell carcinoma of the kidney, showing contraction of the hard dense renal tumor so that the calyces are almost completely closed. The renal tissue also shows a denser shadow than normal.

the widespread use of intravenous pyelographic mediums, a recognition of the alterations of renal anatomy and physiology suggestive of tumor is more definitely widespread. However, experience has shown most urologists that useful as are intravenous secretory pyelograms, they do not offer the criteria obtained by cystoscopy and retrograde pyelograms. Thus in all cases of hematuria, unless the cause is definitely ascertained by ordinary roentgenograms or intravenous urograms, and if a tumor is suspected, there should be a complete cystoscopic examination. The cystoscopy done at the time of hematuria establishes the site of the lesion, the secretory change on the suspected side compared with the normal, or the proof that the opposite kidney functions normally. The retrograde pyelograms give clearer delineations of the internal architecture of the renal system, far superior to secretory urograms. Often when a tumor is present, with destruction of the renal parenchyma there are insufficient secretory mediums into the pelves and calyces for an interpretive pyelogram with secretory mediums.

Studies of the pyelograms with the types of renal carcinoma have shown the various changes. Large tumor shadows are seen with elongated, narrowed and in other places dilated spidery-shaped calyces spreading beyond a normal renal area; these are characteristic of the clear cell carcinoma. The shadows at times resemble those seen in the pelves and calyces when the kidneys are polycystic. Some resemble the shadows seen with solitary or simple cysts and, since these are often unilateral, may make a specific diagnosis difficult. Narrowing or obliteration of the calyces as shown by the roentgenograms—in fact, in some cases complete disappearance of calycine shadows, with only a compressed pelvic

shadow present, are the appearances associated with the granular cell type of carcinoma. In some cases there appear areas of the large spreading spidery calyces, and in others the obliterated or pinched calyces; this type of roentgenogram is more often seen with the mixed type of tumor. Studies made of kidneys after removal support the interpretive diagnosis in large series of these cases. Hemorrhage is not infrequent within the tumors themselves, and with subsequent necrosis there are deposits of calcified material at various parts of the tumors, so that calcified areas, either small or large, are present in about 25 per cent of the cases and are shown by roentgenograms.

Cytologic examination of the urine is of importance in these cases, as has been stressed by Papanicolaou.³ This may be of the gross urine or may be of material from the ureteral specimens. The examination in which the sediment is fixed and mounted as tissue requires experience as to interpretation because of the changes occurring in the cells which are due to immersion in the urine. In parenchymal tumors, two types of cells are seen: (1) unusually large cells with irregular or multiple nuclei, especially cells with mitotic changes and (2) vacuolated cells with clear cytoplasm, rich in lipids, so characteristic of clear-celled carcinoma (hypernephroma). With experienced observers the high proportion of cases in which these cells are found and the accuracy of their diagnosis are astounding. The use of cytologic studies in all urinary tumors is an essential step, particularly when diagnosis is difficult.

THERAPY OF PARENCHYMAL CARCINOMA

Early surgical removal of the involved kidney and capsule is the only known corrective procedure for renal parenchymal carcinoma. Although recession in size of some renal carcinomas has been reported as a result of roentgen therapy, the resistance of these cancers to roentgen therapy is well known, and any temporary recession of the tumor mass is largely the effect of the radiation on the smaller blood vessels. Because such radiation takes a number of weeks to administer and its effect may be doubtful, preoperative radiation is not widely used for renal carcinoma. In addition, there is difficulty in wound healing and a higher proportion of wound disruption following the operation. These in themselves would not be insurmountable difficulties if there were assurance of the effectiveness of the radiation on the tumor cells, but any effect with the radiation at present administered is questionable. With absence of demonstrable metastases, all renal tumors should, if possible, be completely extirpated as soon as recognized. The major difficulty lies in earlier recognition. Even with questionable metastases, removal still offers the only possible chance with the therapeutic agents now at hand. The size of the tumor mass is no contraindication; although size may be an indication of the duration of a tumor, it is not a definite indication of its activity. Often large tumors may be of low grade malignancy and of slow extension. Theoretically ligation and division of the renal vessels are the ideal first steps in surgical removal of a tumor. This may be more simply accomplished by transperitoneal approach. It may also be done effectively through the flank. The

3. Papanicolaou, G. N.: *New Procedure for Staining Vaginal Smears*, Science 95: 438, 1942; Tr. Am. A. Genito-Urin. Surgeons 33: 147, 1946.

approach, whether flank or abdominal, should be large, much larger than the tumor, so that after ligation and severance of the vessels, the tumor, kidney and perinephritic fascia may be removed en masse with a minimum of trauma. Since parenchymal tumors rarely, if ever, metastasize down the ureter, it is only necessary to remove the accessible portion. Examination of the removed organ will often show extension of tumor into minor or major veins; hence handling of the mass should be at a minimum and severance of the blood vessels should be the first step. Tumor masses may extend into the renal vein and vena cava. Such should be removed from these vessels with resection after removal, experience having shown that at times tumors do not recur in such cases. Retroperitoneal masses of lymph node involvement may be present. These are more frequently seen with the granular cell and mixed cell tumors and are usually discovered after the renal tumor mass is removed. When these nodes are found they may be removed, but rarely has it been possible to do so completely.

PROGNOSIS AND RESULTS

The clear cell renal carcinomas have a much higher percentage of freedom from recurrences than do the granular or mixed tumors. The clear cell tumors, even though of large size, when removed without dissemination show in the various clinics a freedom from recurrence over a five year period varying from 25 to 50 per cent. The freedom from recurrence with the granular cell tumors is much lower, varying from 5 to 10 per cent. Cases of demonstrable metastases treated by roentgen rays without nephrectomy or after nephrectomy show an extremely low survival rate; most patients do not survive a year. Rarely a solitary metastasis may occur and be successfully removed with a good survival rate. Even solitary pulmonary metastases have been successfully removed in clear cell carcinomas with apparently no further recurrence. Improvement in the figures of recurrence is occurring largely as a result of earlier recognition of the disease and widespread improvement in diagnostic procedures. Earlier investigation of those with suggestive symptoms is necessary because even in the most accessible clinics symptoms are present at least a year on the average before the diagnosis is made. It will be interesting to observe the effect of the establishment of the cytologic test of a urinary smear as advocated by Papanicolaou in the routine of laboratories, in the hope that these cases will be reached by therapy earlier in the disease, for therein lies the path of improvement.

CANCER OF THE RENAL PELVIS

Carcinoma of the renal pelvis, arising from the specialized epithelial lining, is the same as the epithelial cancers of the ureter and the bladder. They are less frequent than parenchymal tumor, occurring in the Squier Clinic in a ratio of 1 to 8 (22 to 160). They occur in both sexes, slightly more frequently in males, and occur equally in either kidney. They are more apt to occur in the elderly age group. The decades are 30 to 40 years, 1 case; 40 to 50 years, 3 cases; 50 to 60 years, 7 cases; 60 to 70 years, 6 cases, and 70 to 80 years, 5 cases.

Recognizable etiologic factors may have some influence on the formation of this tumor. Certain aniline dyes with carcinogenic factors have been known to produce these tumors, both clinically

and experimentally. The linking of these carcinogenic agents with the large number of this type of tumors seen is rare at present because known exposure is rare among the patients seen. Pelvic tumors have been reported as associated with pelvic calculi and with long-standing inflammatory processes. Many authors have emphasized the dangers of neglecting calculi and long-standing infections in the kidney. There does not seem to be any recognizable association with congenital abnormalities themselves in the development of pelvic tumors.

The types of tumors of the pelvis are similar to those of the ureter and bladder. They occur from the specialized epithelium of mesodermal origin. They are classified as (1) papilloma, (2) papillary carcinoma, (3) squamous cell carcinoma and (4) undifferentiated carcinoma.

About 50 to 70 per cent of all tumors of the renal pelvis are papillary. They may be single or multiple and are villous or wartlike growths similar to those



Fig. 3 (J.I.).—An intravenous pyelogram of a papillary carcinoma of the pelvis of the right kidney. The irregular less dense shadow is seen surrounded by the denser iodide in the urine in the pelvis.

found in the bladder. They may be small or extensive and may be associated with similar tumors in the ureter or the bladder. They are rarely bilateral. These papillary tumors when seen have a higher percentage of malignancy than tumors of the bladder; over 50 per cent of the papillary tumors occurring in the renal pelvis show malignant tendencies. Microscopically the structure of the papilloma is simple and uniform; it consists of a series of branching connective tissue stromas covered with layers of transitional epithelium. When cancerous, they are more compact with invasion of the submucous tissue and with alteration of cell division and abundance of mitoses; the cells break through the basement membranes. Not infrequently encrustations of urine occur with necrosis of the tumor.

Squamous cell carcinoma in the pelvis is less frequent than the papillary type. It occurs with irritant lesions such as infection, calculus, ureteritis cystica and leukoplakia. The microscopic sections show epidermization and formation of many epithelial pearls. Ulceration is not uncommon, and these tumors are less vascular than the papillary tumors.

Infiltrating undifferentiated carcinoma occurs but

is infrequent. It has the same characteristics as the similar tumors of the bladder; invasion, infiltration, destruction and extension. Tumors of the renal pelvis of papillary type frequently metastasize down the ureter as well as through the lymphatics. Carcinoma most frequently metastasizes through the lymphatics of the renal pedicle and the retroperitoneal nodes. They both then disseminate widely to the lungs, liver, adrenal glands and bones.

Symptoms.—The most outstanding symptom of tumor of the renal pelvis is hematuria. Among 22 cases at the Squier Clinic, hematuria at some time or other occurred in all cases. Other writers have a smaller percentage, but the fact is that this is by far the most outstanding symptom, and it may be the only one. Pain may occur but is not constant nor frequent. If the bleeding is profuse there may be renal colic. If obstruction of the pelvis occurs there may be pain in the flank similar to colic in hydronephrosis. As a rule, however, pain is an infrequent symptom of pelvic tumors.

In only a small number of cases does a palpable tumor mass develop; a concomitant hydronephrosis is the cause of the mass, and this may be relieved by the passage of obstructing material. General symptoms, such as loss of weight, strength and appetite, appear only late in the disease. Vesical symptoms of burning, frequency and dysuria may be present if there is an associated infection.

Diagnosis.—There are no symptoms that are diagnostic of tumor of the renal pelvis. In a case of hematuria and with a complete investigation with cystoscopy and retrograde pyelograms, the condition can be recognized. The defect shadows in papillary tumors may be definitely diagnostic. Not infrequently, obstruction of the ureter may occur, especially with squamous cell carcinoma, and the obstructing lesion produces a characteristic shadow in the retrograde pyelographic mediums. It is in this condition that cytologic urinary studies are often of great value. Not infrequently small pieces of tumor tissue may be passed in the urine which if recognized and examined will definitely establish the diagnosis. In others, sedimentation of the cells in the urine and fixation, mounting and staining may lead to the identification of villous fragments with epithelial cells characteristic of the papillary tumors of the pelvis.

Therapy and Prognosis.—Because pelvic tumors, especially of the papillary variety, are often associated with or followed by similar tumors in the lower part of the ureter, the operative procedure is complete ureteronephrectomy. The usual procedure is a flank or abdominal nephrectomy and the removal of the lower part of the ureter and the cuff of bladder by an extraperitoneal approach in the pelvis through the lower part of the abdomen. The immediate operative mortality of the combined operation is less than 2 per cent in some clinics.

With papillary tumors of the pelvis the prognosis is good. The metastases outside of the urinary tract occur late, and with an early removal this type of tumor gives the best prognosis of all renal tumors. If retroperitoneal metastases have occurred, as they may, though infrequently seen at the time of operation, the prognosis is bad because they are rather resistant to radiation. It seems the bleeding of these papillary tumors occurs early, and as a result these cases are not infrequently seen early. Occasionally a resection of the pelvis with the tumor as the center of

the resected area may be necessary when the kidney is solitary; this has been followed without recurrence.

The squamous cell tumor of the pelvis and the undifferentiated carcinoma offer a poor prognosis. They both have invasive tendencies from the onset, may not present diagnosing symptoms for some time. At operation, extension of the tumor into the kidney itself and to the retroperitoneal nodes is usually found. It is in this latter type because of the exfoliation that studies in uterine cytology, like the vaginal fluid studies in uterine carcinoma, may offer an earlier diagnosis.

EMBRYOMAS OF CHILDHOOD (WILMS)

Embryonal carcinosarcoma, or Wilms' tumor of the kidney, is one of the more frequent carcinomas of childhood, an age in which cancer is rare but extremely malignant. It is a disease of infancy, the great majority of cases occurring before 2 years of age. More than 80 per cent of the reported cases occur before the seventh year. Rarely they may occur in adult life, and are then apparently less malignant. They are found in both sexes in about equal numbers and occur with about the same frequency in both kidneys. The tumors may be bilateral. They usually are not associated with external genitourinary malformations. It has often been reported that the children in whom these tumors occur are among the more comely children seen. Although occasionally trauma has been suggested as being associated with the tumor, there is no evidence or reason to believe that it plays any part in the production of the tumor.

These tumors may arise from any portion of the kidney. They may be in either pole or pelvic area and sometimes may be extrarenal. The tumors expand as they grow and may compress or surround the normal renal tissue. They are most frequently covered by the renal capsule, and grow rapidly with large round or lobular masses, most usually in the line of least resistance forward into the abdominal cavity. They may develop cysts within themselves and sometimes increase rapidly in size because of hemorrhage within the cysts. The microscopic picture is of embryonic renal elements with isolated tubules and glomeruli among the cancerous tissue, the appearance of giant cells and various epithelial cancer cells scattered among or co-existing with areas of sarcomatous tissue. Striated and non-striated muscle cells may occur as well as other cancerous tissue structures.

These tumors are usually rapid growing. However, they apparently remain within the renal capsule for a considerable period, growing only locally and then later metastasizing. The metastases apparently are most often through the blood stream to the lungs and to the liver. Lymph metastases may occur to retroperitoneal and mediastinal nodes. Involvement of the skeletal system is not frequent. At times the tumor may grow directly through the capsule and involve adjacent organs. It is thought that metastases may be precipitated by rough handling of the tumor during examinations.

Symptoms.—There are no symptoms of Wilms' tumor in its early stage; no pain, no tenderness and usually no hematuria. The usual suspicion of its presence is when a mass is discovered in the abdomen or flank, or the size of the child's abdomen draws the attention of the mother or some other observer to the change. Hematuria is infrequent, occurring in less than 10 per cent of the

cases. Pallor, weakness and loss of weight may be present with or precede the finding of the abdominal mass, and they always are present late in the disease. Fever is not of infrequent occurrence and when present may be due to tumor necrosis



Fig. 4 (J.G.).—An intravenous pyelogram in a child with a large Wilms tumor of the right kidney. The left kidney is normal. The right shows a mass above which has displaced calyces laterally and obstructed them. The psoas line is obliterated on that side.

or to hemorrhage within the tumor. Urinary symptoms are usually absent; only occasionally may there be dysuria associated with the clots of the rare hematuria.

Diagnosis.—The diagnosis is made by noting a mass in an infant's loin or side of the abdomen. This mass is usually large, not tender, easily palpable, ballotable through the flank, rounded or lobular and the transverse colon may be anterior to the mass if it is the left kidney. The mass may or may not be fixed in the flank. If it feels lobular or cystic, the lobules cannot be transilluminated. Other conditions which may give a similar picture are conditions which are diagnosed by similar procedures. The various other conditions presenting a similar picture are carcinoma of the adrenal gland (sympathicoblastoma), chronic cystic fibrosis of the kidney, congenital obstructive hydronephrosis, congenital polycystic disease of the kidneys and the retroperitoneal sarcomas of childhood.

In all these conditions, including Wilms' tumor, urologic investigating procedures are absolutely necessary as soon as a mass is felt or suspected. Ordinary roentgenograms of the abdomen may show the mass in the flank and at times some calcification. As a rule little information is obtained from simple roentgenograms of the abdomen, and usually intravenous or subcutaneous secretory pyelograms are also done. If Wilms' tumor is present there is usually the normal secreting and anatomic kidney on one side and there may be diminished secretion on the affected side or calyceal or pelvic distortion as a contrast. At times the calyces may be displaced far from the pelvis. In large tumors there may be no or insufficient pyelographic mediums secreted by the kidney and cystoscopy with retrograde pyelograms may be needed

to show the calyceal and pelvic distortion and loss of renal function, both due to tumor growth. Tumor cells may be found in the urine, but this is infrequent with Wilms' embryoma. The main roentgen observation is the shadows suggestive of changes in the renal parenchyma. These are entirely different from the normal but displaced pyelographic shadow seen with adrenal sympathicoblastoma, from the large reservoir of pelvis and calyces seen with hydronephrosis, from the complete absence of pelvis or calyces and function with chronic cystic fibrosis, from the spidery bilateral changes with congenital polycystic disease and from the normal renal pyelographic shadow seen with retroperitoneal sarcoma.

Treatment and Prognosis.—The embryonal tumors of the kidney are among the most malignant of all renal growths. Their growth at times is extraordinary, and in a large number of cases death will occur in less than a year. In early recognition and in early therapy lies the hope for patients with these tumors. For a long time surgical treatment was considered to be hopeless in these cases, and high voltage roentgen therapy was considered to offer the better prognosis. At the same time and subsequently roentgen therapy was used to bring about a decrease in size of the tumor, to be followed by nephrectomy.

Due to the work of Ladd and his confreres,⁴ at the Boston Children's Hospital a more serious study has been made of the removal of these tumors by the transperitoneal route with a minimum of handling either for diagnostic purposes or on the operating table, with ligation of the renal vessels and pedicle before displacement of the kidney and tumor. The result has been a much higher proportion of these cases free from recurrence than has formerly been reported. Similar reports have been issued from other clinics which show that better results may be obtained by earlier recognition of the tumor, avoidance of trauma by manipulation and earlier and more complete surgical treatment without trauma or dissemination of the tumor. According to reports at times complete disappearance of the tumor mass and freedom from recurrence follow high voltage roentgen therapy. Though this result is unusual, high voltage roentgen therapy is an essential therapeutic agent in cases in which pulmonary or other metastases demonstrated at time of diagnosis make surgical removal of the tumor unwise. The prognosis in these cases will be improved by the combination of early recognition of the condition and better surgical relief.

Wilms' tumors occur occasionally in adults, 53 cases having been collected from the literature by Esersky, Saffer, Panoff and Jacobi.⁵ They have been reported in the seventh and ninth decades but are more frequent from 30 to 60 years. A mass in the abdomen is the usual symptom. The triad of hematuria, pain and mass is not always evident. Fever is frequent. The pyelographic studies show renal changes consisting in growth of a mass. Operative removal has been accomplished. Prognosis is poor even with postoperative radiation therapy, probably poorer than in infants.

(To be Continued)

4. Ladd, W. E., and White, R. R.: Embryoma (Wilms' Tumor), *J. A. M. A.* 117:1848, (Nov. 29) 1941.

5. Esersky, G. L.; Saffer, S. H.; Panoff, C. E., and Jacobi, M.: Wilms' Tumor on the Adult: Review of Literature and Report of Three Additional Cases, *J. Urol.* 58:397, 1947.

Clinical Notes, Suggestions and New Instruments

LIPOGRANULOMA OF THE PERITONEUM

Report of Three Cases Following the Intra-Abdominal Use of Liquid Petrolatum

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Many agents have been employed for the prevention of postoperative intra-abdominal adhesions. During the first two decades of this century, sterile oils were frequently introduced into the peritoneal cavity for this purpose. Their use in experimental animals led observers of this period to believe that such substances as wool fat, petrolatum and liquid petrolatum would inhibit the formation of adhesions.¹ These investigators, however, failed to allow sufficient time before sacrificing their animals, and this led to a false impression that sterile oils not only were harmless but would aid in the prevention of postoperative adhesions. It was later demonstrated that petrolatum and liquid petrolatum (Russian mineral oil)



Fig. 1 (case 1).—Roentgenogram showing calcified lipogranuloma.

were intensely irritating to the peritoneum, were slowly absorbed, if at all, and resulted in the formation of granulomas and adhesions.² Norris and Davison, in 1934,³ reported 2 patients, demonstrating the complications that follow the use

of sterile liquid petrolatum in the abdominal cavity. The roentgenographic observations in most of these cases are characterized by calcareous deposits widely distributed throughout the peritoneal cavity, as seen in cases 1 and 2 reported here.

REPORT OF CASES

CASE 1.—Mrs. E. S., white, aged 65, was admitted to Grady Memorial Hospital May 23, 1947, complaining of cramping abdominal pain, vomiting and obstipation of two days'

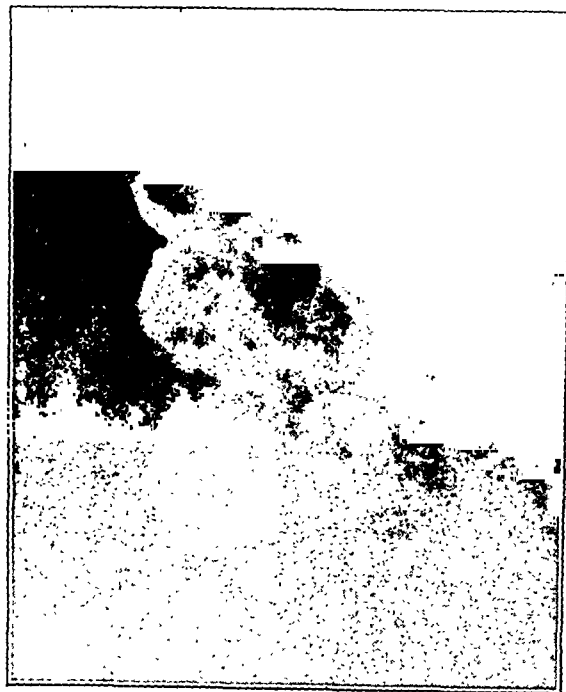


Fig. 2 (case 1).—Enlargement of roentgenogram showing calcified lipogranuloma.

duration. A supracervical hysterectomy had been performed in 1924. Two years later the patient began to have frequent episodes of colicky abdominal pain due to partial intestinal obstruction. During the past twenty years she had been seen frequently in the outpatient department with similar complaints.

Examination revealed moderate generalized distention and tenderness of the abdomen. Frequent peristaltic rushes were heard on auscultation, and an occasional visible peristaltic wave was observed. There was considerable induration in both vaginal fornices.

Roentgenographic examination of the abdomen showed numerous cystic calcific structures distributed throughout the abdomen, without significant arrangement in their distribution (figs. 1 and 2). Many of these structures were circular in contour; some had a mulberry-like appearance and others a serrated silhouette. They varied in diameter from 1 to 3 cm. The psoas and kidney shadows appeared normal. Several loops of distended small intestine were observed, suggesting the presence of obstruction.

A celiotomy was performed on the day of admission. The peritoneum was seen to be extremely thickened, and the entire peritoneal cavity was obliterated by dense adhesions. There were calcified nodules, varying in size from 0.5 to 3.5 cm., scattered throughout the peritoneal cavity. A loop of dilated small intestine was identified with difficulty, and a blind Witzel-type enterostomy was done. Histologic examination of several nodules showed dense fibrous tissue with metaplastic bone formation and calcification. A foreign body reaction was

From the Whitehead Department of Surgery (Drs. Whitaker and Campelli) and the Department of Roentgenology (Dr. Walker), Emory University School of Medicine, and Grady Memorial Hospital.

1. Wilkie, D. P. E.: The Use of Oil in Abdominal Surgery, *Surg., Gynec. & Obst.* 10:126-132 (Feb.) 1910. Gellhorn, G.: Experimental Studies of Postoperative Peritoneal Adhesions, *ibid.* 8:505-513 (May) 1909. Blake, J. B.: The Use of Sterile Oil to Prevent Intraperitoneal Adhesions, *ibid.* 6:667-670 (June) 1908.

2. Cubbins, W. R., and Abt, J. A.: A Preliminary Report Concerning the Effect of Foreign Substances in the Peritoneal Cavity, *Surg., Gynec. & Obst.* 22:571-579 (May) 1916. Pope, S.: The Prevention of Peritoneal Adhesions by the Use of Citrate Solution, *Ann. Surg.* 63:205-207 (Feb.) 1916.

3. Norris, J. C., and Davison, T. C.: Peritoneal Reaction to Liquid Petrolatum, *J. A. M. A.* 103:1846-1847 (Dec. 15) 1934.

represented in some areas by chronic inflammatory cells, large mononuclear phagocytes and foreign body giant cells surrounding large empty spaces. The cytoplasm of both the mononuclear phagocytes and the giant cells showed fairly large vacuoles (figs. 3 and 4). Histologic diagnosis was lipogranuloma.



Fig. 3.—Photomicrograph of biopsy specimen showing lipid vacuoles with surrounding foreign body reaction.

The patient slowly improved following operation and was discharged one month later.

CASE 2.—Mrs. E. B., white, aged 53, was first admitted to Grady Memorial Hospital in 1924, at which time an inflammatory mass involving the right tube and ovary was excised. Sterile liquid petrolatum was placed in the peritoneal cavity. A laparotomy was performed five years later, and a tumor of the left ovary was removed. Examination nine years following the first operation revealed a firm mass that filled the entire pelvis. There were associated symptoms and physical observations consistent with partial obstruction of the small intestine. Dilated loops of small intestine were seen on roentgenographic examination. Multiple firm nodules were palpated through the anterior abdominal wall.

The patient was admitted to the hospital many times for recurrent intestinal obstruction, and eleven years following the first abdominal operation an exploration was performed because of persistent symptoms of intestinal obstruction. Dense multiple adhesions with "numerous metastatic plaques" on the intestinal serosa and parietal peritoneum were observed. An ileostomy was performed. No specimen for biopsy was obtained. In December 1940, a celiotomy was performed because of symptoms of obstruction. A matted mass of peritoneal adhesions was encountered, and the exploration was abandoned after a specimen of a nodule was obtained for biopsy. Histologic examination revealed lipogranuloma of the peritoneum.

This patient was readmitted May 25, 1947, complaining of vomiting, abdominal distention and pain of three days' duration. There was slight abdominal distention; the peristalsis was hypoactive. She was moderately dehydrated. A roentgenogram of the abdomen at the time of admission revealed several loops of distended small intestine and a small amount of gas in the large intestine. Numerous calcareous ringlike densities (figs. 5

and 6), measuring up to 3 cm. in diameter, were seen throughout the abdomen; many were circular or oval in shape, but some had a mulberry-like appearance. These densities were most numerous along the inferior aspect of the diaphragm and in the region of the pelvic inlet. The psoas shadows and the lumbar part of the spine did not show significant pathologic changes.

Treatment was supportive, and a Miller-Abbott tube was passed. The patient became asymptomatic on the second hospital day and was discharged on the fourth day.

CASE 3.—T. H., white, age 68, had liquid petrolatum introduced into his peritoneal cavity in 1927 following an appendectomy. Abdominal exploration was later carried out on two occasions (1928, 1934) for intestinal obstruction. He was admitted to Emory University Hospital Sept. 19, 1947, complaining of pain in the right upper quadrant of the abdomen and intolerance to fatty foods. Cholecystograms demonstrated a nonfunctioning gallbladder. Two large laminated opacities were seen in the right upper quadrant of the abdomen. On September 20, cholecystectomy was attempted, but was abandoned in the presence of a matted mass of leathery adhesions apparently distributed throughout the abdomen. Identification of abdominal viscera was impossible; the gallbladder was neither seen nor felt. Unfortunately, a biopsy specimen of the mass of adhesions was not obtained, but it is believed that the instillation of liquid petrolatum into the peritoneal cavity resulted in the symptoms and the operative observations in this case.

COMMENT

Following the introduction of liquid petrolatum into the peritoneal cavity, there occurs an intensive inflammatory reaction which results in the formation of dense adhesions between the viscera, mesentery and peritoneum.⁴ This complication may



Fig. 4.—Photomicrograph of biopsy specimen showing lipid vacuoles with surrounding foreign body reaction. Calcification is shown in the dark area in the upper portion of the photomicrograph.

require months or even years to develop fully. Late sequelae include widespread formation of grayish yellow nodules. Histologically, the nodules are cystic and are surrounded by fibrous

4. Cruickshank, A.: Paraffinoma of the Peritoneum, *Lancet* 1:46 (Jan. 4) 1941.

tissue which contains many foreign body giant cells. Most of the giant cells are located near large vacuoles which contain the liquid petrolatum. Calcification occurs late and is distributed at various points in the fibrous stroma, being most conspicuous in the periphery of the nodule.

The roentgenographic appearance of lipogranuloma of the peritoneum is characterized by multiple widely distributed calcareous cystlike structures throughout the peritoneal cavity. However, this roentgenographic pattern is not pathognomonic of this condition. Pugh⁵ and Weig and his co-workers⁶ described cases of pseudomyxoma peritonei in which similar calcareous deposits were seen roentgenographically and subsequently observed at operation. Pugh stated, however, that in one of his cases the possibility of parafinoma could not be ruled out, since it was known that some foreign substance had been instilled into the abdomen at the time of a previous operation. Therefore, the differential diagnosis between pseudomyxoma and lipogranuloma can hardly be made on the basis of roentgenographic examination alone. Nevertheless, the recognition of the characteristic calcareous deposits is of great clinical importance, since it indicates in both conditions the presence of extensive peritoneal adhesions.

Calcareous structures in the abdominal cavity result from various factors which must be considered in the differential diagnosis of lipogranuloma. Calcified leiomyomas are usually few in number and possess a more flocculent type of calcification. Echinococcus cysts are limited in number and are more often located in the region of the liver. Usually a large parent



Fig. 5 (case 2).—Roentgenogram showing calcified lipogranuloma.

cyst is present. Opaque biliary and urinary calculi may be identified by proper roentgenographic procedures. Calcified lymph nodes rarely have a cystic appearance. Vascular calcifications are found in typical locations and are frequently

tubular in character. Calcified appendiceal epiplocae may resemble lipogranulomas in individual lesions, but are fewer in number and are freely movable in the abdominal cavity.⁷

SUMMARY

The cases reported here illustrate the intense inflammatory reaction in the peritoneum which may occur after the use of petrolatum and its derivatives in the abdominal cavity. The late development of recurrent obstructive symptoms was com-



Fig. 6 (case 2).—Enlargement of roentgenogram showing calcified lipogranuloma.

mon in these cases. The roentgenographic observation of ovoid calcified bodies throughout the abdominal cavity is particularly significant. Similar roentgenographic observations may occur in pseudomyxoma peritonei. The history of a celiotomy performed during the period when the intraperitoneal use of oils was in vogue should lead one to suspect lipogranuloma peritonei. Tough dense adhesions throughout the abdominal cavity were observed in the 3 cases presented. Surgical intervention for obstructive symptoms in these cases is often hazardous and frequently futile.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following statement.

AUSTIN SMITH, M.D., Secretary.

CORRECTION

Dr. James F. McCahey of Philadelphia has called attention to an inaccuracy in a former report of the Council on "Untoward Effects of Endocrine Therapy" (J. A. M. A. 125:786-789, 1944) reading:

"In castrate and eunuchoid cases and in the male climacteric, testosterone provides a potent replacement therapy," with a footnote reference to Dr. J. B. Hamilton's article on testis therapy in "Glandular Physiology and Therapy." The reference number should have been placed directly after the words "castrate and eunuchoid cases," since the term "male climacteric" does not appear at any point in the article by Hamilton. The article was cited because of its warning against overstimulation by the use of testosterone replacement therapy.

The Council regrets that this error had escaped its attention. The question of the acceptability of testosterone in the treatment of the so-called male climacteric is being reconsidered by the Council in the light of further experience.

5. Pugh, D. G.: A Roentgenologic Aspect of Pseudomyxoma Peritonei, *Radiology* 39: 320-322 (Sept.) 1942.

6. Weig, C. G.; Koenig, E. C., and Culver, G. J.: Pseudomyxoma Peritonei, *Am. J. Roentgenol.* 52: 305-309 (Nov.) 1944.

7. Morales, O.: Calcified Appendices Epiplocae as Freely Mobile Bodies in the Abdominal Cavity, *Acta radiol.* 25: 653-661 (Nov. 21) 1944.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 2, 1948

WORLD MEDICAL ASSOCIATION

During the week of September 6-12, representatives of some thirty national medical associations met in Geneva to consider problems of current importance to the medical profession. Among the outstanding accomplishments was the elaboration of an inspirational pledge to be taken by young physicians throughout the world. The assembly considered also the development of a bulletin for the World Medical Association. This publication is to appear quarterly under the editorship of Dr. Morris Fishbein. A committee was also established to develop an international series of principles of medical ethics which would be acceptable to the national medical associations of all of the countries concerned. Among other questions given careful consideration was the establishment of suitable liaison with the World Health Organization of the United Nations and with UNESCO. The problems in which these groups may be jointly engaged would include the perfection of abstracting of the important medical literature of the world and the arrangement of international congresses in the field of medicine; also the place of the physician in time of war and the work now in process on the Pharmacopoeia. Significant also were discussions of the standardization of medical education on a high level throughout the world and plans for postgraduate medical education. Through the office of the secretary general, Dr. Louis H. Bauer, reports were made available on the status of the physician in various nations, on war crimes committed by German physicians and on many other subjects.

Most interest during the meeting centered on the adoption of a series of principles governing the provision of medical care under Social Security. Remarkable unanimity developed in the points of view of doctors throughout the world, all of whom were more concerned with the quality of medical service that could be rendered than with a widespread distribution of a low grade of medical care. THE JOURNAL will make available shortly the final text of the principles governing

medical care under Social Security and also the final text of the pledge. These two documents constitute a landmark in medical progress, since they reaffirm the ethical ideals of the physician throughout the world and the common understanding of physicians everywhere as to the factors necessary for competent medical service.

DIETARY LIPIDS IN TUBERCULOSIS

About forty years ago Weigert¹ conducted feeding experiments with inoculated guinea pigs and concluded that the tuberculous process generalized more rapidly in animals fed a strict carbohydrate diet than in control animals receiving an additional liberal amount of milk fat. From this it seemed logical to assume that dietary lipids could produce only beneficial effects in tuberculosis.

Twenty years later this early assumption was challenged by Troteanu,² who administered cod liver oil directly into the stomach of guinea pigs previously inoculated intraperitoneally with bovine tubercle bacilli. The cod liver oil enhanced the progress of the experimental tuberculosis. This result was confirmed by Negre and his associates,³ who found that the ingestion or subcutaneous injection of cod liver oil or olive oil resulted in an enhancement of experimental tuberculosis in both guinea pigs and rabbits. The opposite results were demonstrated with ethyl esters of palmitic, myristic, lauric, arachidic, capric and stearic acid. Given subcutaneously, these lipids retarded the appearance of experimental tuberculous lesions.

It seemed probable therefore that dietary lipids might exert either beneficial or deleterious effect in clinical cases, depending on the type of lipid used. This conclusion was tested by Dubos and Davis,⁴ of the Rockefeller Institute, who studied the growth of *Mycobacterium tuberculosis* in liquid mediums containing a series of fatty acids. They found that capric, lauric, palmitic and myristic acids were inhibitory at dilutions as high as 1:10,000,000. Growth occurred at concentrations as high as 1:100 with stearic, oleic, linoleic or butyric acids.

Tests of the effects of feeding these antituberculous lipids are currently reported by Hedgecock,⁵ of the department of bacteriology of St. Louis University. The lipids were administered to male Swiss albino mice 90 days of age in the form of oleic acid, olive oil, linseed oil or coconut oil. Each of the lipids was mixed with a fat-free, casein-supplemented ration in a concentration of 20 per cent. The four lipid-containing rations together with the nonlipid control ration were each administered to a group of 25 mice. After having

1. Weigert, R.: Berl. Klin. Wchnschr. **44**:1209, 1907.

2. Troteanu, V. C.: Compt. Rend. Soc. de Biol. **102**:141, 1929.

3. Negre, L.: Ann. Inst. Pasteur **49**:319, 1932. Negre, L.; Berthelot, A., and Bretey, L.: Ibid. **59**:457, 1937.

4. Dubos, R. J., and Davis, B. D.: J. Exper. Med. **83**:409, 1946.

5. Hedgecock, L. W.: Proc. Soc. Exper. Biol. & Med. **68**:106 (May) 1948.

been fed these rations for ten days, 5 mice of each group were set aside to serve as dietary controls. Five others were used for chemical analyses of body fat. The remaining 15 animals of each group were each inoculated intravenously with 0.5 mg. of recently isolated *M. tuberculosis*. The large dose was used because mice are known to be highly resistant to experimental tuberculosis.

Animals remaining alive at the end of thirty-seven days were killed with ether. Sections were prepared from the lungs, liver, spleen and kidneys of each animal at the end of the experimental period, and each organ was assayed for tuberculosis. The assay was based on the relative percentage of tissue of each organ involved. Thus: $\pm$ represented about 10 per cent coagulative necrosis, $+$ represented 25 per cent necrosis, and so on to $++++$, in which the pathologic involvement was about 95 per cent of the entire organ.

On this scale the least involvement ($\pm$) was recorded in the group fed coconut oil. With groups fed olive oil, oleic acid or linseed oil, many of the organs showed $+++$ involvement. Study of the weight loss showed that there was a smaller loss of weight and a lower mortality in the coconut oil group than with the group fed the other lipids.

Determinations of the saponification value and iodine value indicated that each dietary lipid was deposited in large amounts in the body fat. Chemical analyses also showed that coconut oil contains about 7 per cent capric, 46 per cent lauric, 19 per cent myristic and 10 per cent palmitic acid, the four acids found by Dubos to be particularly inhibitory to the *in vitro* growth of the tubercle bacillus.

The conclusion was drawn that 20 per cent addition of coconut oil to the routine casein-supplemented ration retards the progress of experimental tuberculosis in mice. An enhanced progress of tuberculosis is caused by the addition of similar amounts of olive oil, linseed oil or oleic acid. A direct application of these findings to clinical medicine, however, has not yet been suggested.

SALICYLATE THERAPY IN RHEUMATIC FEVER

To effect a cure of rheumatic fever, Coburn¹ claims, one of two objectives must be realized. Either the immune response of the host must be modified so that the patient recovers promptly after his first attack or the capacity of the infected micro-organism to elaborate antigen must be inhibited by a chemotherapeutic agent. Since neither of these objectives has yet been realized, one is limited to the suppression of the inflammatory reaction. If salicylate therapy can modify the sterile inflammatory reaction which occurs during activity of the rheumatic process, one might expect this effect to inhibit the development of cardiac disease.

Evaluation of any form of therapy in rheumatic fever, Coburn states, is difficult because about 20 per cent of young adults may be expected to have a monocytic attack and recover spontaneously under symptomatic treatment. About 40 per cent of 43 young adults treated with daily doses of 3 to 6 Gm. of sodium salicylate manifested rheumatic activity for more than one month and showed a definite tendency to contract valvular heart disease, while all of 18 patients treated with daily doses of 10 Gm. or more of sodium salicylate either orally or intravenously showed rapid clinical recovery and a progressive fall in the blood sedimentation rate. Although half of the 18 patients had electrocardiographic evidence of carditis on admission, in none did clinical signs of valvular heart disease develop.

By the method of determination of plasma salicylate concentration, developed by Brodie, Udenfriend and Coburn,² it was found that with the institution of daily oral doses of 10 Gm. of sodium salicylate the plasma level rose in forty-eight hours to between 331 and 454 micrograms per cubic centimeter, with an average maintenance level of 368 micrograms. At this plasma level the sedimentation rate of each patient fell within six days and continued to fall progressively to normal so long as this level was maintained. The induction of a high plasma salicylate level was followed not only by a rapid progressive fall in the blood sedimentation rate but also by a marked and rapid improvement in the clinical appearance.

Twenty patients maintained at 359 to 400 micrograms per cubic centimeter manifested a prompt and progressive subsidence of rheumatic inflammation, while 20 other patients with plasma levels below 250 micrograms per cubic centimeter continued to manifest an active inflammatory process. The intravenous administration of sodium salicylate is required to obtain a rapid rise in the plasma concentration of salicylate to 400 micrograms per cubic centimeter. In none of the 38 rheumatic patients treated with 10 Gm. of sodium salicylate daily did valvular heart disease develop, and in 21 out of 63 similar cases in which only small doses of sodium salicylate were given physical signs of heart disease developed. Coburn feels that a plasma salicylate level of at least 350 micrograms per cubic centimeter may be required to suppress the rheumatic reaction and that plasma level below 200 micrograms per cubic centimeter may be sufficient to relieve symptoms while masking a progressive inflammatory process.

Reid³ treated patients having rheumatic fever with sodium salicylate orally and found that when the average plasma level concentration was less than 20 mg.

1. Coburn, A. F.: Salicylate Therapy in Rheumatic Fever, *Bull. Johns Hopkins Hosp.* 73: 435-464 (Dec.) 1943.

2. Brodie, B. B.; Udenfriend, S., and Coburn, A. F.: Determination of Salicylic Acid in Plasma, *J. Pharmacol. & Exper. Therap.* 80: 114-117 (Jan.) 1944.

3. Reid, J.: Does Sodium Salicylate Cure Rheumatic Fever? *Quarterly J. Med.* 17: 139-151 (April) 1948.

per hundred cubic centimeters the erythrocyte sedimentation rate showed no signs of falling; when the level was between 20 and 30 mg. per hundred cubic centimeters a slow fall was observed; when it was between 30 and 40 mg. the rate rapidly returned to normal. He argues that if the erythrocyte sedimentation rate can be accepted as a reliable index of rheumatic activity, then sodium salicylate has a curative action in the disease directly related to the plasma concentration of the drug. This conclusion is strongly supported by the observation that recurrence of the disease during oral treatment with salicylate coincides with pronounced fall in plasma salicylate level and subsequent remission with a secondary rise in the plasma level of the drug. It appears therefore that the main practical problem in the treatment of rheumatic fever is to know when enough salicylate is being given.

Reid concludes that effective treatment of rheumatic fever with salicylate demands that dosage should be controlled by repeated estimations of plasma or urinary salicylate. Cure of the disease depends not only on reaching but also on maintaining a high plasma salicylate level.

While salicylic acid is probably not the final solution to the therapeutic problems of rheumatic fever, with the development of blood level methods other drugs may be found to be more effective in suppressing the rheumatic reaction.

Current Comment

EMPLOYMENT OF THE HANDICAPPED

National Employ the Physically Handicapped Week beginning on October 3 has been set aside by President Truman to call attention to the courageous efforts of many disabled persons and to dramatize the activities of organizations engaged in rehabilitation. Repeated studies and demonstrations have shown that the physically handicapped employee is as dependable and productive as his normal co-worker and in many cases even more so. Reemployment would be more effectively accomplished if physicians understood the vital role that they must play throughout the entire rehabilitation procedure. Reassurance concerning reemployability will do much to prevent traumatic neurosis. Competent medical care of the disabled will aim to restore the injured to his former earning capacity in the same line of work and with minimum loss of time. When there is a residual disability that requires retraining and readjustment, the physician, the rehabilitation counselor and the work supervisor must work together in fitting job requirements to the physical ability. Work itself can be a potent therapeutic force. There is no greater contribution to peace of mind than congenial employment in safe and healthful surroundings. The National Committee in charge of Employ

the Physically Handicapped Week bases its appeal to the public on terms of social and economic necessity. However, employment of the handicapped is not only good economy but also good medicine as well.

SILICOSIS

Silicosis continues to be a baffling problem after decades of study by professional and lay investigators. Patrick Heffernan, who has maintained an interest in this subject for many years,¹ comments² on the statement by Starling that "no substance introduced into protoplasm has any chemical influence on it unless it be soluble." Heffernan feels that the statement is misleading. As evidence, he refers to the "permutite" water softening process, a reaction between a solid and liquid, to the gas mask with the reaction between a solid and gas and, finally, to the more recent demonstration of the atomic architecture of minerals which show lattice structure. Comminution of minerals exposes fractured surfaces on which at numerous points free and unsatisfied valency forces exist whereby water can be attracted and held as water of constitution in the hydrated particle. Freshly powdered quartzite is just such a mineral, carrying powerful free and unsatisfied valency forces avid to take up water and other reactive material at its fractured surfaces. Obviously, when such powder comes in contact with protoplasm, it will hydrate itself at the expense of the fluid content of the protoplasm. The activity of mineral particles with other solids, liquids, or gases falls under four headings: (1) direct combination, (2) hydration, (3) oxidation and (4) hydrolysis. The behavior of dust produced from any rock formation can be estimated usually beforehand from its atomic lattice structure and depends on the existence at the fractured surfaces of free and unsatisfied valency forces. The fractured surfaces of a quartzite particle present a huge negative ion. A broken asbestos fiber can be active only at its fractured extremities, and a sheet of mica can be active, if at all, at its fractured edges only. As the particles become weathered, their activity disappears. Silica dust is more active chemically as a dry aerosol than in any wet vehicle. Heffernan says that the essential agent in the causation of true silicosis, as distinguished from nonspecific pneumoconiosis, is the freshly cloven silica particle. The pathologic process basically consists of the hydration of the silica particle at the expense of the cell protoplasm. Because of its atomic lattice structures, quartzite, when powdered, yields a more virulent dust than other silica formations. Fully hydrated silica—silica hydrosol—sometimes mistakenly called "silicic acid," is nontoxic and enters freely into the metabolism of plants and animals, while partly hydrated suspension of silica in water, "colloidal silica," retains some of the chemical activity of the dry powder but in lesser degree. Thus we progress with the vastly important problem of silicosis. Exact knowledge of its cause will assure more successful control and preventive measures against this health hazard.

1. Heffernan, P.: Some Aspects of Silicosis, *Tubercle* 11: 481, 1930; *J. Indust. Hyg.* 8: 11, 1926; What Is Silicosis? *Tubercle* 16: 397, 1935.
2. Heffernan, P.: What Is Silicosis? *Tubercle* 20: 169, 1948.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Sept. 8, 1948.

Record in Physician-Attended Births

Data released by National Office of Vital Statistics show that 1946 marked a new high record in the matter of physician-attended births and births taking place in hospitals. Of the 3,288,672 live births recorded for the year, 2,708,223 (82.4 per cent) were in hospitals and 402,759 (12.2 per cent) were attended by physicians outside hospitals. Only 177,690 (5.4 per cent) were attended by midwives or other nonmembers of the medical profession. By contrast, in 1935 only 37 per cent of confinements were in hospitals, slightly more than one half were attended by physicians outside hospitals and in 1 out of 8 midwives or other nonprofessional persons were utilized.

The statistical picture reveals significant differences between white and nonwhite groups and between urban and rural areas. All but 1.6 per cent of the white births were attended by physicians, and 87.1 per cent occurred in hospitals. For non-white births, the physician in attendance percentage was 65.2, and only 45.2 per cent took place in hospitals. For city residents, 97.9 per cent had physicians and 92.5 per cent of the births were in hospitals. Corresponding percentages for rural dwellers were 89.6 and 67.1.

Orthopedic Surgeons on New Certification Board

Drs. H. H. Kessler, Atha Thomas and R. H. Alldredge are the three physician members of the first board of directors of the American Board for Certification of the Prosthetic and Orthopedic Appliance Industry. The other four members of the board, all of whom are laymen engaged in the artificial limb industry, are Chester C. Haddan, Denver; David E. Stolpe, New York; Lee J. Fawver, Kansas City, and J. B. Korrady, Chicago. Announcement of the board's election and of Mr. Haddan's election as its president was made in Washington by Glenn E. Jackson, secretary of the committee which arranged for establishment and incorporation of the new American Board. Its function will be to set up standards for certification of qualified limb fitters and of the firms by which they are employed. Approximately 400 of the estimated 575 manufacturers of prosthetic and orthopedic appliances in the United States participated in the mail ballot poll which resulted in approval of the certification plan and election of the four lay members of the directors' board, said Mr. Jackson. The three medical members were unopposed.

Progress in Aviation Medicine

Objectives and accomplishments of the aeromedical and aviation psychologic research programs currently being conducted under technical supervision of the Air Surgeon are described briefly in the U. S. Air Force annual report made public August 22. The 112 page illustrated report cites: development of a flying suit that will enable aircrewmembers to perform their duties with safety and in comfort at 60,000 feet; progress toward perfection of an internally ventilated flying suit that will give the wearer a "temperature tolerance" ranging from minus 60 F. to plus 180 F.; rising emphasis on development of lighter and readily transportable surgical and medical equipment.

"A preliminary proposal for an air-borne hospital utilizing the most recent equipment has been prepared that promises to revolutionize medical field operations in support of air-borne operations," says the report.

"To further medical progress and to meet urgent civilian emergency needs, the Air Force has made much of its specialized equipment available to research institutions and physicians. A number of low-pressure chambers with accessories, for example, have been loaned to American universities, and during the infantile paralysis epidemic of last year Air Force resuscitation apparatus, and even aircraft for emergency evacuation, were utilized for civilian care."

Progress Report on Bone Strength Study

The National Bureau of Standards has published a technical report on the progress of investigations which it is conducting, with cooperation of the Naval Medical Research Institute, on mechanical properties of human bones. Initiation of the research was prompted by military necessity to acquire information which might prove useful in protecting aviation personnel in crashes, seat ejection from aircraft and in parachute openings. Another practical military consideration is the injury frequently caused to sailors when the ship's deck buckles as the result of an explosion, fracture of the os calcis being a common occurrence in such instances.

Initial work in the cooperative study involved seventeen tests on specimens made from compact type bone from extremities of human beings and monkeys. Of the fourteen specimens tested in compression, with the direction of the load parallel to the fibers of the bone, it was demonstrated that their average ultimate strength was about 23,000 pounds per square inch. "These preliminary data," said the report, "indicate that bone may be considered an elastic, brittle material, having about one fourth the compressive strength of cast iron and more than twice that of hickory wood."

"Model" Milk Ordinance

Thirty-four million Americans are now protected through a model milk ordinance whose nationwide adoption was recommended by the U. S. Public Health Service. The estimate was made in conjunction with issuance by the U. S. Public Health Service of a compilation of disease outbreaks in 1946 which were ascribed to milk and milk products. During that year, according to reports forwarded to Washington by state and territorial health authorities, there were twelve such outbreaks. Eleven involved raw milk and the other followed accidental contamination of pasteurized milk by a toxic chemical. There were six other outbreaks in which milk was suspected but not conclusively incriminated. The milk ordinance is now effective in 1,207 municipalities and 207 counties in 39 states. It has been incorporated into state regulations in 31 states, 2 of which enforce compulsory pasteurization.

Navy Reports on Incidence of Phlebitis and Sinusitis

The Navy Department's Bureau of Medicine and Surgery has completed ten year studies on the incidence of phlebitis and sinusitis. Regarding the former, compiled data show that 6,222 cases were reported among Navy and Marine Corps personnel between 1936 and 1945, inclusive, in addition to which there were 1,131 readmissions. The peak was reached in 1945, when 63 out of each 100,000 persons in uniform were on the sick list with phlebitis. During the same decade, sinusitis cases totaled 39,553 for an average incidence rate of 357.5 per 100,000. It was estimated that one eighth of the cases existed prior to entry into military service. The peak year was 1943 (464.4 per 100,000) but beginning in 1944 and continuing to the present rate has declined steadily.

Dr. Robert J. Anderson Heads Public Health Service Tuberculosis Division

Dr. Scheele, Surgeon General of the U. S. Public Health Service, has appointed Dr. Robert J. Anderson as medical director and chief of the Tuberculosis Division. He succeeds Dr. Francis J. Weber, who has been assigned to postgraduate work in psychiatry at Johns Hopkins University. Dr. Anderson formerly was assistant chief of the division.

Information Center on Child Life Research

A new office that will function as a clearing house of information on medical and other types of research relating to children's health and welfare has been set up in the Children's Bureau, Federal Security Agency. Clara E. Council has been appointed director of the unit, which will be under the general supervision of Dr. Martha M. Eliot, associate chief of the Bureau.

GOVERNMENT SERVICES

ARMY

COORDINATE QUARANTINE REGULATIONS

Public health quarantine regulations of the Canal Zone and the United States have been coordinated in a way that will facilitate maritime and air commerce after September 1. As of this date, ships and aircraft receiving complete public health quarantine clearance at a port in one of these areas will not be required to undergo quarantine inspection on arrival at the other area, unless stops are made at a foreign country en route.

Surgeon General Leonard A. Scheele of the U. S. Public Health Service explained that quarantine inspections are performed primarily to prevent importation of the internationally designated "quarantinable diseases": cholera, transmitted by infected food or water or by contact; plague, transmitted by the rat flea or contact; typhus, transmitted by lice; smallpox, transmitted by contact, and yellow fever, transmitted by the *Aedes aegypti* and other mosquitoes. Ships are inspected before being permitted to dock unless specifically exempted. A sanitary inspection is made, and the ship fumigated if a rat colony is found on board. Air travelers are inspected in a quarantine room at the airport before being permitted to come in contact with persons at the place of arrival. During flight from yellow fever areas airplanes are sprayed on the inside to kill mosquitoes, and they may be sprayed again on arrival.

Health officials have declared that under the provisions of revised quarantine regulations the new United States-Canal Zone procedure for exempting ship and aircraft from inspection will be entirely safe with respect to disease control.

THE HOTTEST PLACE IN NORTH AMERICA

A study prepared for presentation to the American Meteorological Society by Arnold Court, meteorologist in the Office of the Quartermaster General in Washington, shows that the hottest place on the North American continent is the surface of the ground in Death Valley in Southeastern California during the month of July. On the basis of averages covering a period of thirty-six years, a maximum temperature of 180 F. may be expected on the desert floor on one day every seven years, while at 5 feet above the ground, where official temperatures are recorded, the reading would be 125 F. Weather observations in Death Valley were begun April 30, 1891, when a temporary weather bureau station was set up on Furnace Creek. In June 1911, a cooperative station of the Weather Bureau was established at Greenland Ranch, 178 feet below sea level, where observations have been taken by the foreman of the Pacific Coast Borax Company once each day ever since, with few exceptions. The highest temperature ever reported for Death Valley, 5 feet above the ground, was on July 10, 1913, when 134 F. was registered; during the week of July 7-14, 1913, the maximum for each day did not fall below 127 F., a record which has not since been equaled. July temperatures show wide spreads between maximum and minimum, and the minimum reported for Greenland Ranch was 68.26 F. in 1938.

THE STERNBERG EXHIBIT

The sixth exhibit in the series, "Famous Men of Army Medicine," currently presented by the Army Medical Museum, is devoted to George Miller Sternberg, Surgeon General of the Army from 1893 to 1902, who, during his distinguished career, was a president of the American Medical Association and of many other scientific societies. Dr. Sternberg is said to have seen more service on the battlefield during the Civil War than any other medical officer. After this period he acquired wide experience in dealing with cholera and yellow fever epidemics, and this led him to take up the study of bacteriology on which much of his fame rests. He was the first in this country to show the organisms of tuberculosis, malaria and cholera, and the first to teach American physicians the fundamental principles and technics of bacteriology. Among many other accomplishments, he was the author of a textbook on bacteriology.

MEDICAL MEETING IN KOREA

On August 11, the Army medical officers stationed in Korea met at the 34th General Hospital and were addressed by Dr. Lenox K. Baker of Duke University College of Medicine, Durham, N. C., who is touring the command as a consultant in orthopedic surgery. Dr. Baker lectured on "Low Back Pain" and made ward rounds. At the afternoon session, Lieut. Col. John J. Marren, commanding officer of the hospital, presided; Dr. Baker discussed Colles' and Pott's fractures; Lieut. Morton Goldman discussed hepatic function tests, and Lieut. Rolf Andreassen presented a case report; Lieut. Duane presented a paper entitled "Fractures and Dislocations of the Spine," which was discussed by Dr. Baker. A picnic supper was held in the evening at the officers' club.

EXTEND TRAINING PROGRAM LIMIT

The Surgeon General's Office announces that the date on which applications may be received from young doctors to take advantage of the Army's graduate training program has been extended to November 1. Under the program, selected medical graduates may serve their internships and residencies in civilian hospitals of their own choice, with first lieutenant's pay, but at the end of their year's training interns must apply for regular Army commissions and may apply for residency training; residents may continue their residency toward specialty qualification. Each, however, is required to serve a year of active duty for each year of training at Army expense.

PERSONAL

The British Ambassador to the United States, Sir Oliver Franks, presented decorations at the British Embassy in July to Dr. John F. Fulton and Brigadier General Edgar E. Hume, both of whom are honorary consultants for the Army Medical Library.

MISCELLANEOUS

COURSES IN RADIOISOTOPES

The Oak Ridge Institute of Nuclear Studies announces that four additional radioisotope courses have been scheduled as follows: October 25 with industrial personnel having priority; Jan. 3, 1949, government personnel; Feb. 14, 1949, medical personnel, and March 14, 1949, general. Thirty-two participants will be accepted in each course, and the four weeks' period will be divided into laboratory work, lectures on laboratory experiments, general background lectures and special topic seminars. Information may be obtained from Dr. Ralph T. Overman, Special Training Division, P. O. Box 117, Oak Ridge, Tenn.

NATIONAL SECURITY RESOURCES BOARD

The following chiefs of sections of the Medical Division of the National Security Resources Board have been appointed, thus virtually completing the staff of the Medical Division: Rear Admiral Thomas Carlyle Anderson, M.C., U. S. N., in charge of the unit dealing with medical and related manpower; Lieutenant Colonel Howard B. Nelson, in charge of planning for health supplies; Vincent B. Lamoureux, in charge of sanitary engineering aspects of national security, and Ruth Freeman, in charge of the division's section on public health nursing.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Arkansas

Hutchinson, James H. Jr.....Monticello
Ledbetter, John P.....Jonesboro
May, J. T.....Little Rock

California

Brinkerhoff, Elmer E.....Oakland
Chole, Arthur S.....Los Angeles
Durand, Robert L.....Colfax
Lake, Thomas L.....Berkeley
Marchildon, John W.....Hollywood
Matthews, Ephraim D.....Kerman
Pinkerton, Allan L.....Los Angeles

Connecticut

Hickey, Joseph P.....Hartford
Martin, John S.....Naugatuck

District of Columbia

Marbury, William B. Jr.....Washington

Florida

Edwards, Harry M.....Gainesville
Merlin, Hyman.....Miami
Morgan, John M.....Sanford

Idaho

Mackey, Oliver M. Jr.....Lewiston

Illinois

Condon, Joseph V.....Chicago
Hogan, Charles C.....Peoria
Kagen, Irving N.....Chicago
Mueller, Ferdinand J.....Belleville
O'Connor, Edward F.....Chicago
Roland, Samuel I.....Chicago
Sperlino, Harry.....Chicago
Trapanese, Dominic R.....Forest Park
Weyl, Wolfgang L.....Chicago

Indiana

Chivington, Paul V. Jr.....Indianapolis
Fortner, Joseph G.....Vincennes
Harrington, James F. Jr.....Richmond
Martz, Bill L.....Anderson
Ramsdell, Glen A.....La Porte

Iowa

Corton, Richard V. M.....Waterloo

Kentucky

Clarke, William F.....Prestonsburg

Louisiana

Avant, James A. Jr.....New Orleans
Baffes, Thomas G.....New Orleans
Fontenelle, Irwin L.....New Orleans

Maryland

Bennett, Eben T.....Baltimore
Holbrook, William A. Jr. College Park
Pratt, Louis J. Jr.....Baltimore
Straham, Charles.....Baltimore

Massachusetts

Street, Russell B. Jr.....Conway

Michigan

Blothouse, Robert E.....Muskegon
Caughey, Andrew F. Jr.....Ann Arbor
Dommitch, George O.....Detroit
Picard, Joseph D.....Dearborn
Schmitt, Phillip E.....Howell
Van Ommen, Ray A.....Zeeland
Venier, Anton G.....Detroit
Zawacki, Sigmund G.....Dearborn

Minnesota

Borgen, Alfred E.....Culver
Danielson, Charles D.....Minneapolis
Glaeser, John H.....Swansville

Minnesota—Continued

Lie, Dagfinn.....Fisher
Stimac, Emil M.....Virginia

Mississippi

Gee, Happy L.....Summer
Martin, Raymond S. Jr.....Jackson

Missouri

Eder, Gerald J.....Clayton

Nebraska

Lutt, Carl J.....Omaha
Morgenstern, Nathan L.....Omaha

New Hampshire

Duprey, William G. Jr.....North Conway

New Jersey

Belle, Louis J.....Elizabeth
Feuerstein, Sidney S. West New York

New York

Deagustinis, August S.....New York
Fish, Gilbert D. Jr.....Palham
Hall, Robert A.....Albany
Hull, John G.....Tupper Lake
Johnson, Angelo G.....Hunter
McManus, Richard G.....New Rochelle
Mark, Herbert.....New York
Morse, William R.....Niagara Falls
Murphy, James S.....New York
Shapiro, Lawrence.....Brooklyn

North Dakota

Johnson, Paul L.....Taylor
Kulland, Roy E.....Palermo
Olmstead, Edwin G.....Enderlin
Paulson, Wallace J.....Grand Forks

Ohio

Bohl, Robert W.....Hillsboro
Buhrman, Charles M.....New Carlisle
Centa, Charles J.....Cleveland
Coburn, Donald J.....University Heights
Dyer, Robert D.....Worthington
Fecher, Mark P.....Dayton
Hanna, James L.....Cleveland
Hesselbrock, John J.....Cincinnati
Kasle, Travis.....Toledo
Klumpp, Thorp A. Jr.....Canton
Marks, Bernard H.....Columbus
Peirce, Robert J.....Cincinnati
Resch, Frederick A.....Youngstown
Saylor, Mark L.....Canal Winchester
Shively, Frank L. Jr.....Dayton
Stechschulte, Jerome B. Columbus Grove
Woodcock, Charles W.....Warren

Oklahoma

Bradshaw, John O.....Welch
Burgdorf, Richard H.....Custer City

Oregon

Heckhard, Roy E.....Seaside
Lymann, Howard W.....Portland

Pennsylvania

Bedrossian, Edward H.....Drexel Hill
Benjamin, Craig L.....Wayne
Conwell, Quentin R.....Philadelphia
Cutler, Irvin.....Philadelphia
Crosley, Archer P. Jr.....Wyncote
DeLozier, Joseph W.....Hollidaysburg
Drinker, Henry M.....Jenkinstown
Fisher, Harry.....Munhall
Greenberg, Marvin S.....Philadelphia
Guerin, Paul F.....Erie
Hayes, James C.....Pittsburgh
Hughes, George V. G.....Pittsburgh

Pennsylvania—Continued

Kilduff, Charles J. Jr.....Coatesville
Kresock, Joseph W.....Carbondale
Liddell, Joseph S.....Pittsburgh
Loftus, Joseph A.....Hudson
Lovette, John B.....Spangler
Madonna, Harry M.....Philadelphia
Manno, Bruno V.....Scranton
Masucci, Elmo F.....Scranton
Podkul, Theodore B.....Wilkes-Barre
Sugarman, Leroy A. South Coatesville
Sweetser, Arthur A. Jr.....Scranton
Wiest, Hiram L.....East Petersburg

Rhode Island

Leonard, William A. Jr.....Providence
Sherer, Joseph F. Jr.....Little Compton
Turco, Vincent J.....Westerly

Texas

Barth, John H.....Yoakum
Brown, George W.....Jacksonville
Culver, George A.....Corpus Christi
Duff, Bedford K.....Galveston
Duff, Robert L.....Galveston
Dumas, Lawrence W. Jr.....Dallas
Durham, Charles A.....Houston
Gilliland, Robert M.....Galveston
Gary, Charles L. Jr.....Dallas
Henry, Marshall G.....Dallas
Holmes, James E.....San Antonio
Mims, Arthur T.....Dallas
Moore, William L. Jr.....Austin
Obenchain, Thomas H. Jr.....Dallas
Purnell, James E.....Austin
Rudnick, Leon R.....Mabank
Scheurich, Richard E.....Goose Creek
Sparks, Tom C. Jr.....Amarillo
Spiller, William F. III.....Houston
Spivey, Dan.....Lufkin

Utah

Lamb, Harold B.....Salt Lake City

Virginia

Bell, Cecil C. Jr.....Lynchburg
Levitt, Herbert M.....Petersburg
Shiuh, E. Ling.....Richmond

Washington

Berg, Arthur W.....Cathlamet
Lindstrom, Toivo A.....Auburn
Mooney, James G.....Roslyn

West Virginia

Robinett, Paul W.....Huntington

Wisconsin

Dockery, Joseph N.....So. Milwaukee
Duguid, Robert H.....Sparta
Green, Ray E.....Fond du Lac
Hoff, Allen D.....Viroqua
Kennedy, James A.....Oshkosh
Otto, Owen.....Madison
Shearer, Charles E.....Edgerton
Wheeler, Clayton E. Jr.....Viroqua

Wyoming

Hanna, Joe T.....Lingle

Canal Zone

Clark, Sidney B.....Balboa Hghts

Puerto Rico

Maestre, Federico J.....Utuaado

Canada

Horsley, George E.....Vancouver
Kert, Morley J.....Ottawa
McLauchlan, Duncan A.....Chernmainus

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

Personal.—More than forty doctors of Meriden, Wallingford and Southington joined the Meriden Medical Society, June 16, in paying honor to Dr. Fessenden N. Otis, Meriden, on the occasion of his retirement June 30 from the Meriden Hospital, where for many years he was head of the radiology department. Dr. Otis received an inscribed sterling silver tray showing testimonials of high regard expressed at the meeting.

Postgraduate Education at Yale.—First formal courses of postgraduate education for Connecticut physicians began the last week in September with a course in gastroenterology. The program is sponsored jointly by Yale University and the Connecticut State Medical Society under the direction of Dr. William R. Willard, Assistant Dean of Yale (*THE JOURNAL* April 17, p. 1055). Twelve sessions of two hours each will be devoted to diseases of the gastrointestinal tract and interrelationships with diseases of other organs. This course runs through December 16. An orientation course for part time physician anesthetists will be offered in eight all-day sessions October 11 to November 30. Laboratory and clinical demonstrations and discussions will be conducted from October 13 to December 1. A review of present knowledge and new developments in endocrinology will be given on Wednesdays from 6:30 to 10 p. m., and ten sessions in obstetrical practice will be given between October 5 and December 7. A course in surgical diagnosis will run from September 29 through December 15. Other courses will include orthopedics, demonstrations in anatomy, cardiovascular disease, metabolism, nutrition and diet, infectious diseases, pathology and early diagnosis of cancer.

FLORIDA

Medical Supplement in Newspaper.—The Escambia County Medical Society sponsored an eighteen page medical supplement in the regular Sunday edition of the *Pensacola News-Journal* June 27. A committee from the medical society assembled and edited copy submitted by doctors, nurses, health officials; welfare agencies and others. The cooperation and support of business firms in Pensacola helped make the enterprise possible. Comment on the medical supplement indicates that the reception by the public was favorable. The project was a revival of a successful venture of prewar days.

ILLINOIS

Record Low Infant Mortality.—The Illinois Department of Public Health reports fewer than 18 stillbirths per thousand live births during the first quarter of 1948, an all time low. Record low mortality rates were also recorded for babies under 1 month and for babies under 1 year, 19.2 and 28.9, respectively, per thousand live births. Neonatal mortality was higher among residents of the Southern Region (21 per thousand live births). Lowest neonatal rate was among residents of the Peoria Metropolitan Area, 14 per thousand live births. The death rate for premature births for the entire state is 9.5 for every thousand live births. The highest rate, 10.1 per thousand, was found in the Chicago Metropolitan Area. The maternal death rate for the state, 1.1 per thousand, was exceeded in the Central Area where 1.7 mothers per thousand live births died, and mortality among mothers of newborn babies in the Central Area was over four times as heavy as for mothers in the Northern Area.

Chicago

Public Lecture Series on Tuberculosis.—The Tuberculosis Institute of Chicago and Cook County is presenting a series of seven free lectures on tuberculosis at the Museum of Science and Industry on Sunday afternoons at 3 p. m. The remaining lectures, all by Chicago physicians, will be:

- Oct. 3, Drs. Robert G. Block, Edwin R. Levine and Henry C. Sweany, Round Table Discussion, Treatment of Tuberculosis.
- Oct. 10, J. Edmond Bryant, The Stuns and Tuberculosis.
- Oct. 17, William F. Petersen, Tuberculosis and the Climate.
- Oct. 24, George C. Turner and Dr. Levine, Round Table Discussion, Can Vaccination Control Tuberculosis?
- Oct. 31, Arthur W. Newitt, Tuberculosis Control in Chicago.

Study Recommendations of Health Survey.—Plans for a drive to put into effect the recommendations of the Chicago-Cook County Health Survey completed last year will be the duty of a committee being formed under sponsorship of the Health

Division of the Council of Social Agencies of Chicago. Chairman of the committee is Samuel A. Goldsmith, director of the Jewish Charities. The division is now determining the number of recommendations of the survey that have already been adopted by the governmental and other agencies of the county. When this study is completed, expansion and financing of health departments will be outlined for an intensive campaign throughout the county. The Chicago-Cook County Health Survey was made by the U. S. Public Health Service, at the request of Edward J. Kelly, then mayor, and Clayton F. Smith, then president of the county board. They acted at the suggestion of a committee representing the Council of Social Agencies, the Chicago Medical Society and the Institute of Medicine of Chicago. The reports, forty-one in all, evaluated health facilities of the community and made detailed and practical recommendations for improvement. Major emphasis in the coming campaign is expected to be placed on the expansion of the Chicago Health Department and the Cook County Department of Public Health.

INDIANA

Personal.—Dr. Carl H. McCasky, chairman of the executive committee of the Indiana State Medical Association, presented a paper on "Surgery of the Laryngeal Disease" September 7 before the Pan-Pacific Surgical Association at Honolulu, Hawaii. The association is composed of all countries bordering on the Pacific Ocean.

University News.—Surgical research has been added to the program of the Indiana University School of Medicine, Bloomington-Indianapolis, with the appointment of Dr. Leslie W. Freeman as director of surgical research and the granting of a fellowship in surgery to Dr. Joseph C. Finneran. The program will be under the supervision of Dr. Harris B. Shumacker Jr., professor and chairman of the department of surgery. Dr. Freeman, previously associated with Dr. Shumacker in a similar capacity at Yale University, New Haven, Conn., served as chief of paraplegia services at Vaughan Hospital, Hines, Ill., and at Kennedy General Hospital, Memphis, Tenn., when it was taken over by the Veterans Administration. Dr. Finneran, a graduate of Harvard University, Cambridge, Mass., and Johns Hopkins University School of Medicine, Baltimore, recently completed an internship in surgery at Johns Hopkins Hospital.

MAINE

Research Program of Jackson Memorial Laboratory.—The new plan for organization of the work of the Roscoe B. Jackson Memorial Laboratory appears as part of the annual report released August 27. The first section deals with the laboratory's research program, a twelve month activity, whose objective is to use genetic methods and material as a basis for research in biology and medicine with special emphasis on the growth and development of mammals. This is under the direction of George W. Woolley, Ph.D., the laboratory's assistant director. A supply service to 150 major research laboratories constitutes the second phase of the program. The scientific supervision of this work is under Elizabeth S. Russell, Ph.D., at the main units of the laboratory. Year around cooperation will be maintained with practical breeders of small mammals. The Summer Research Center for Visiting Investigators involves ten weeks or more of activity. This phase of the program affords opportunity for visiting investigators to use special material and techniques available at the laboratory. A second objective is to bring into contact with the resident staff for the exchange of ideas, persons with new and varied points of view and skills. The Training School for Scientific and Medical Students will include year round opportunities for certain students, aside from its ten weeks of intensive summer activity, including those who will work for the doctorate under cooperative agreement with established universities. The trustees have decided to exclude from the Jackson Laboratories all of the radioactive isotopes and all animals and materials exposed to them, but a controlled population of mice will be constantly maintained at the laboratory for staff members wishing to take material to other laboratories for work with isotopes.

MARYLAND

County Society Program.—The Montgomery County Medical Society, meeting on the third Tuesday of each month at the Manor Country Club, Norbeck, has arranged the following programs for the rest of 1948:

- October 19, A. Magruder MacDonald, Washington, D. C., The Duties and Functions of the Coroner's Office.
- November 16, Brian B. Blades, Washington, D. C., Tumors of the Chest.
- December 21, Frank P. Foster, Boston, Diseases of the Thyroid Gland.

MASSACHUSETTS

Dean Burwell Resigns.—Dr. C. Sidney Burwell, dean of Harvard Medical School, Boston, since 1935, has resigned effective Feb. 1, 1949. He will continue actively as research professor of clinical medicine in the medical school and at the Peter Bent Brigham Hospital. Dr. Burwell received his M.D. degree from the Harvard Medical School in 1919. After World War I he spent some time as a member of the American Red Cross Commission in Western Russia. He came to Harvard from Vanderbilt University School of Medicine, Nashville, Tenn., where he had been professor of medicine and physician in chief at the Vanderbilt University Hospital. Earlier he taught and performed research at Harvard and at the John Hopkins Medical School.

Appoint Professor of Psychiatry.—Dr. William Malamud, clinical professor of psychiatry, has been appointed chief of the Boston University School of Medicine's department of psychiatry and psychology, and full time professor of psychiatry, also consultant in psychiatry on the staff of Massachusetts Memorial Hospital and chief of psychiatric service of the outpatient department. Dr. Malamud has been a part time member of the Boston University faculty for eight years and head of the department of psychiatry since 1946. He is chairman of the training committee of the U. S. Public Health Service, Division of Mental Hygiene; chairman of the Committee on Mental Education of the Group for the Advancement of Psychiatry, and counselor of the American Psychological Association. A graduate of McGill University Faculty of Medicine, Montreal, Canada, 1921, Dr. Malamud was associate professor and professor of psychiatry at the University of Iowa from 1929 to 1939. Since then he has served as clinical professor of psychiatry at Boston University School of Medicine and Tufts College Medical School.

MICHIGAN

Gordon Scott Appointed Acting Dean at Wayne University.—Gordon H. Scott, Ph.D., chairman of the department of anatomy at Wayne University College of Medicine, Detroit, has been named acting dean of the college to fill the vacancy left by the resignation of Dr. Hardy A. Kemp (THE JOURNAL, August 14, p. 1474). Dr. Scott joined the Wayne University staff in January 1945, having held a similar chairmanship at the University of Southern California School of Medicine, Los Angeles. He had previously served at the Rockefeller Institute for Medical Research in New York and the Washington University School of Medicine in St. Louis. During World War II he handled work in connection with the government's Office of Scientific Research and Development. He did graduate work at Johns Hopkins University and the University of Minnesota.

Symposium on Protoplasm.—The Detroit Institute of Cancer Research will present a symposium on the Fundamental Properties of Protoplasm October 4-6 on the occasion of the dedication of its laboratories. The scientific session will be held in the Horace H. Rackham Educational Memorial Building. Physicians included on the extensive program are:

Carl F. Cori, St. Louis, Recent Work with Crystalline Enzymes.
Harry S. N. Greene, New Haven, Conn., Biological Assessment of Tissue Potentialities.
F. Peyton Rous, New York, The Natural History of a Cancer.
Charles S. Cameron, New York, The Professional Education Program of the American Cancer Society.
Murry M. Copeland, Washington, D. C., Benign Lesions of the Breast.
Willard M. Allen, St. Louis, Clinical Uses of the Sex Hormones.
Stuart W. Harrington, Rochester, Minn., Malignant Lesions of the Breast.
Douglas Quick, New York, Cancer of the Head and Neck.
Bradley L. Coley, New York, Diagnosis and Treatment of Bone Tumors.
Thomas E. Jones, Cleveland, Carcinoma of the Rectum and Sigmoid.
The clinical program has been arranged by the Cancer Committee of the Wayne County Medical Society and is sponsored by the Education Committee of the American Cancer Society, Southeastern Michigan Division.

NEBRASKA

Form Nebraska Medical Foundation.—The Nebraska Medical Foundation, Inc., was formed recently through the efforts of the Nebraska State Medical Association. The purpose of the foundation is to carry on an effective medical education program in the medical sciences, to further research through providing facilities and training for personnel and, in general, to improve medicine and medical care in Nebraska. Through the work and intensive efforts of Dr. Harold S. Morgan, Lincoln, and his committee, which was authorized in 1948 by the council of the state association, the foundation became a reality.

NEW YORK

Erie County Society Meeting.—The Medical Society of the County of Erie will begin its fall programs with its second Clinical Afternoon and Evening, October 20 at the Hotel Statler, Buffalo. Speakers will be:

George E. Slotkin, Buffalo, Results of the Treatment of Urinary Tract Tuberculosis with Streptomycin and Chaulmoogra Oil.
Gera de Takats, Chicago, Treatment of Cerebral Apoplexy.
Charles D. Marple, New York, Use of Anticoagulants in Thromboembolic Conditions with Particular Reference to Coronary Thrombosis and Myocardial Infarction.
Jere W. Lord Jr., New York, Surgical Treatment of Portal Hypertension.

A subscription dinner in honor of the guest speakers will be served between afternoon and evening sessions. Tickets at \$5 each may be secured from the county society in Buffalo.

New York City

University Appointment.—Dr. William L. Watson, of the thoracic surgical service staff of Memorial Hospital for the Treatment of Cancer and Allied Diseases, was appointed associate professor of surgery at the New York University College of Medicine, August 1.

Bronx Society of Neurology and Psychiatry.—The Bronx Society of Neurology and Psychiatry has recently been incorporated with thirty-six members. Its officers are: Dr. Joshua H. Leiner, president; Dr. Jacob H. Friedman, secretary, and Dr. Moses J. Madonick, treasurer.

Emotional Aspects of Rehabilitation.—Joseph Levi, Ph.D., formerly chief clinical psychologist, Veterans Administration Hospital, Bronx, has been appointed research psychologist at the Institute of Rehabilitation, New York University-Bellevue Medical Center. He will be a member of a psychiatric team studying the emotional aspects of rehabilitation under a \$73,500 grant from the Commonwealth Fund to New York University College of Medicine.

Venereal Disease Campaign.—The City of New York Department of Health, with the cooperation of the New York State Department of Health and the U. S. Public Health Service, will launch a month's campaign November 8 to bring under treatment an estimated 250,000 hidden cases of venereal diseases in the city. Representatives of the medical profession have assured the health department of their cooperation, and leaders in the fields of education, religion, health and welfare have been consulted in planning the campaign. Columbia University has prepared a series of fifteen radio transcriptions for broadcast during the campaign.

NORTH CAROLINA

Symposium on Therapy.—Duke University School of Medicine, Durham, will present a Symposium on Therapy November 4-6, at the school of medicine and Duke Hospital. Speakers include:

Harry Gold, New York, Newer Trends in the Management of Congestive Failure.
Carl V. Moore, St. Louis, Recent Advances in the Treatment of Anemia.
Harry L. Rogers, Philadelphia, Recent Therapeutic Trends in Allergic Diseases.
Cornelius P. Rhoads, New York, Recent Advances in the Treatment of Malignant Neoplastic Disease.
William L. Bradford, Rochester, N. Y., Recent Development in the Prevention and Treatment of Certain Communicable Diseases.
Wallace E. Herrell, Rochester, Minn., Present Status of Antibiotic Therapy.
Stewart H. Clifford, Boston, The Prevention of Neonatal Mortality.
Carl F. Schmidt, Philadelphia, Newer Trends and Methods in the Treatment of Peptic Agents.
Chicago, Therapeutic Advances in Endocrinology.
New York, Treatment of Rheumatism and Allied Disorders, Treatment of Syphilis.
Special Surgical Problems of Children.

On Friday at 8 o'clock a round table discussion and questions and answers program will be conducted with Dr. O. H. Perry Pepper, Philadelphia, as a moderator.

OHIO

Personals.—Dr. F. William Sunderman has been appointed head of the department of clinical pathology at the Cleveland Clinic Foundation. Dr. Sunderman received his M.D. and Ph.D. from the University of Pennsylvania, Philadelphia. During the war he was medical director of the Explosives Research Laboratory and an investigator and consultant for a division of the Office of Scientific Research and Development.—Dr. Shelby G. Gamble, assistant professor of physical medicine, Ohio State University College of Medicine, Columbus, has been appointed head of the department of physical medicine at the Cleveland Clinic, Cleveland. He has held similar position at the Starling-Loving University and Children's hospitals in Columbus.

Pediatric Psychiatry.—A new program of training in pediatric psychiatry is in progress at the University of Cincinnati College of Medicine, under the direction of Dr. Richard E. Wolf, assistant professor of pediatric psychiatry. The program is financed by the Commonwealth Fund and the Cincinnati Children's Hospital. Dr. Wolf serves in a consultant capacity for physicians at the Children's Hospital, working along with the physicians on their cases. He holds weekly conferences with hospital nurses and house staff and, in the fall, will lecture to students in the medical college. He is a graduate of Harvard University, Cambridge, Mass., and the University of Pennsylvania School of Medicine, Philadelphia. He has been on the university faculty since 1943.

OKLAHOMA

Spastic Paralysis Treatment Center.—Oklahoma's first center for the treatment of spastic paralysis was recently opened on the South Campus at the University of Oklahoma School of Medicine, Oklahoma City. The Norman Spastic Paralysis Institute is licensed for a maximum of 25 patients.

Postgraduate Study.—Hillcrest Memorial Hospital, Tulsa, will present its second Postgraduate Study Course, fall session, September 7 to December 30 for interns, residents and practicing physicians. There is no fee for the lectures, which are held every evening except Saturday and Sunday from 6 to 7 o'clock.

Personal.—Dr. Arthur A. Hellbaum, professor of physiology, University of Oklahoma School of Medicine, has been named associate dean of graduate studies and research. —Harold A. Shoemaker, Ph.D., has resigned as assistant dean, a position that he held since 1939, but will continue as professor of pharmacology. —Dr. Patric H. Mayginnies, Tulsa, has retired after fifty-one years' practice, forty of which have been in Tulsa. —The council of the Oklahoma State Medical Association has announced the appointment of Mr. John K. Hart as associate executive secretary of the association.

WASHINGTON

Seattle Mass Chest Survey.—Seattle is the fourth city in the nation and the first on the West Coast to inaugurate a mass chest roentgenogram survey. Surveys in Washington, Minneapolis and St. Paul have been completed. The program is sponsored by the Seattle-King County Health Department, the King County Anti-Tuberculosis League and the King County Medical Society. The state department of health, which is furnishing two mobile x-ray units, and the U. S. Public Health Service, which is furnishing sixteen mobile x-ray units, are cooperating with the sponsoring agencies.

Dr. Bennett to Head Anatomy Department.—Dr. H. Stanley Bennett, assistant professor of cytology, department of biology, Massachusetts Institute of Technology, Cambridge, has been appointed professor of anatomy and executive officer of the department of anatomy at the University of Washington School of Medicine, Seattle. Dr. Bennett obtained his M.D. degree from Harvard Medical School Boston, 1936. After an internship at Johns Hopkins Hospital, he was a fellow of the National Research Council and research fellow in anatomy. From 1939 to 1944 he was instructor in anatomy and pharmacology at Harvard Medical School, where he was made associate in anatomy in 1941. From 1942 until 1946 he served in the U. S. Navy.

WEST VIRGINIA

Health Conference Meeting Date Changed.—The annual meeting of the Northern District Health Conference, originally scheduled for October 8 at Fairmont, has been changed to October 22 to enable health workers to attend the psychiatric seminar at Huntington, October 6-7.

Cerebral Palsy Clinic.—A clinic for children with cerebral palsy was formally opened September 25 at Charleston under the sponsorship of the Kanawha County Society for Crippled Children and Adults. The clinic, which will be held in the Kanawha-Charleston Health Department clinic rooms, will be open from 9 to 4 every other Saturday, but it is expected that arrangements can be made soon to hold the clinic at least once each week. Treatment at the present time will be limited to 10 children, but every effort will be made to expand facilities so that additional patients may be accommodated. An orthopedist, a pediatrician, a physical therapist, an occupational therapist and a speech therapist will be in attendance at each session of the clinic, which will be in charge of the members of the medical advisory board. The West Virginia Department of Public Assistance, the Kanawha County Board of Education, the Parents Council (parents of cerebral palsied children), the American Business Club, Alpha Chi Omega, and other interested groups are working actively with the Crippled Children's Society in formulating plans for the clinic.

GENERAL

Meeting of International Cancer Research Commission Postponed.—The meeting of the International Cancer Research Commission, which was to have been held in Paris October 17-22, has been postponed until next year.

Medical Record Librarians Meeting.—The American Association of Medical Record Librarians will meet at the Elks Club, Los Angeles, October 18-22. Included in the program are three panel discussions: Standard Nomenclature on Monday evening, Statistical Data of Hospital Reports on Wednesday afternoon and a Medical-Legal Panel Friday morning. Sectional meetings will be held Friday afternoon.

Meeting of Clinical Pathologists.—The American Society of Clinical Pathologists will hold its annual meeting at the Drake Hotel, Chicago, October 12-15. The scientific program will open with a symposium on the cytologic diagnosis of cancer, followed by other scientific papers and the presentation of the Ward Burdick Award to Dr. Paul R. Cannon, Chicago. Scientific exhibits will be included. The annual banquet will take place October 13 at 7:30 p. m.

National Society Meeting.—The annual convention of the National Society for Crippled Children and Adults, Inc., will be held at the La Salle Hotel, Chicago, November 15-17. Outstanding speakers in the fields of medicine, health and education will discuss progress in work with the handicapped during the past year. The convention will be attended by physicians, therapists, educators, workers with the handicapped and representatives of the society's more than 2,000 state and local units throughout the United States, Canada, Alaska and Hawaii.

Millions for Cancer Research.—The American Cancer Society has awarded \$3,500,000 for cancer research in the year beginning September 1. Specific allotments include Columbia University, \$242,288 in fellowships and individual and institutional grants; Memorial Hospital and the Sloan-Kettering Institute, \$136,276, and Cornell University, \$76,205. The largest allotment was made to the University of Chicago, which will receive \$332,047. Institutions and individual scientists in thirty states participate in the awards, with groups in New York state receiving about one sixth of the total. Massachusetts, Illinois and Pennsylvania follow in that order.

Meeting of the Society for Study of Arteriosclerosis.—The American Society for the Study of Arteriosclerosis will hold its annual meeting at the Hotel Knickerbocker, Chicago, October 31 to November 1 under the presidency of Dr. William B. Kountz, St. Louis, Mo. Papers to be presented include the following:

- I. Mark Scheinker, Cincinnati, Cerebral Vascular Changes in Arterial Hypertension
- o. Some Aspects of the Intermediary
- Minn., Clinical Diagnosis of Arterio
- sclerosis.
- Russell L. Holman, New Orleans, Studies on the Relationship of Diet and Renal Insufficiency to Arterial Disease.
- Rudolf Altschul, Saskatoon, Canada, New Experiments in Arterio-sclerosis.

The guest speaker at the banquet October 31 at 7:30 p. m. will be Dr. Cassius J. Van Slyke, Washington, D. C., director, National Heart Institute.

Marriages

WILLIAM CARL LUDWIG DIEFENBACH III, Long Island, N. Y., to Miss Martha Kahle of Shelter Island, September 11.

HOWARD CARTER DAVIS JR., Greenwich, Conn., to Miss Patricia Nichols French of New York, July 20.

CHARLES R. WILLSON, Wilmington, Ill., to Mrs. Sallie Satterfield of Nokomis at Taylorville, July 2.

RICHARD E. H. DUISBERG, Philadelphia, to Miss Agnes Adamy of New Brunswick, N. J., July 16.

DAVID L. ROSENCRANS, Towanda, Pa., to Miss Barbara S. Allen in Montclair, N. J., July 17.

MARLIN BOYD HOGE to Miss Martha Nell Greenwood, both of Little Rock, Ark., August 16.

CHARLES M. ALLABEN, Binghamton, N. Y., to Mrs. Mary K. Stevens in Buffalo, July 1.

WILLIAM R. DEWAR to Miss Thelma J. Neidig, both of Allentown, Pa., July 10.

HELMUT BAUM, Berlin, Germany, to Miss Betty Marsh of St. Paul, August 22.

PHILIP H. BAKER to Miss Judith Elster, both of Los Angeles, July 11.

Deaths

Solomon Solis-Cohen, Melrose Park, Pa., died in the Jewish Hospital, Philadelphia, July 12, aged 90, of bronchopneumonia and parkinsonism. Dr. Solis-Cohen was born in Philadelphia Sept. 1, 1887 and received his medical degree from Jefferson Medical College, Philadelphia, in 1883. Five years later he was appointed lecturer in clinical medicine. He was professor of clinical medicine from 1902 to 1927, when he was made emeritus professor. Dr. Solis-Cohen had been professor of clinical medicine and therapeutics at the Philadelphia Polyclinic and the College for Graduates in Medicine from 1887 to 1902 and lecturer in therapeutics at Dartmouth College from 1890 to 1892. In 1902 and 1903 he was chairman of the Section on Materia Medica, Pharmacology and Therapeutics of the American Medical Association and in 1907 a member of the House of Delegates. He was a fellow of the College of Physicians of Philadelphia, American College of Physicians and the American Association for the Advancement of Science and an honorary member of the Medical and Chirurgial Faculty of Maryland and other medical societies. From 1899 to 1913 he was a recorder for the Association of American Physicians, and in 1898 and 1899 was president of the Philadelphia County Medical Society. Dr. Solis-Cohen served on the Philadelphia Board of Education from 1925 to 1944 and on the council of the Jewish Agency for Palestine from 1920 to 1942, and he was a founder of the Jewish Theological Seminary of America. From 1887 to 1927 he was physician at Philadelphia General, Jefferson and Jewish hospitals and later was consulting physician. He was a trustee of the United States Pharmacopoeia from 1920 to 1940, and was the author of "Therapeutics of Tuberculosis," 1891, "Essentials of Diagnosis" with A. A. Eshner, 1892-1900, and "Pharmacotherapeutics, Materia Medica and Drug Action" with T. S. Githens, 1928, and editor and contributing author of "A System of Physiological Therapeutics" in eleven volumes, from 1901 to 1904. In 1899 he was a delegate to the third Zionist Congress in Basle.

Berthold Steinbach Pollak ♂ Jersey City, N. J.; born in Vienna, June 26, 1873; Dartmouth Medical School, Hanover, N. H., 1896; member of the House of Delegates of the American Medical Association in 1928 and from 1931 to 1933; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; served as vice president and president of the Hudson County Medical Society; member and director of the National Tuberculosis Association, which he represented at various times as delegate at conferences of the International Union Against Tuberculosis at London, Paris, Lausanne, Brussels, Oslo, Warsaw and Washington; named U. S. delegate to a tuberculosis conference held in Rome; member and director of the American Heart Association and the American Trudeau Society; past president of the New Jersey Public Health and Sanitary Association, New Jersey Tuberculosis League and the New Jersey Hospital Association; member of the executive committee of the Hudson County Tuberculosis League; chairman of the medical board of the Deborah Jewish Consumptive Sanatorium in Browns Mills; phthisiologist at St. Mary's Hospital, Hoboken, Beth Israel Hospital, Newark, Jersey City Medical Center and Christ Hospital; early in his career appointed medical director of the Hudson County Tuberculosis Hospital, which in 1946 was renamed in his honor the Berthold Steinbach Pollak Hospital for Chest Diseases; died in his apartment at the hospital June 27, aged 75, of cerebral thrombosis.

Otto Marburg, New York; born in Roemerstadt, Austria, May 25, 1874; Medizinische Fakultät der Universität, Wien, Austria, 1899; clinical professor of neurology at the Columbia University College of Physicians and Surgeons; member of the American Medical Association and the New York Academy of Medicine; honorary member of the American Neurological Association, the Philadelphia and New York Neurological societies, the Vienna Medical Society and various other scientific associations; served as a vice president of the International Neurological Congress; specialist certified by the American Board of Psychiatry and Neurology; for many years chief of the Neurological Institute of the University of Vienna; on the consulting staffs of Montefiore Hospital and the New York Post Graduate Medical School and Hospital; author of "Microscopic Topographic Atlas of the Central Nervous System," the third edition published in 1927, and many other books on his speciality; died in the Mount Sinai Hospital June 13, aged 74.

Otto August Fiedler ♂ Sheboygan, Wis.; born in Stockbridge, Wis., March 9, 1873; Wisconsin College of Physicians and Surgeons, Milwaukee, 1902; past president of the state

board of health, State Medical Society of Wisconsin and the Sheboygan County Medical Society; served in the Spanish-American War and with the American Expeditionary Forces in France during World War I; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; formerly assistant professor of surgery at the Marquette University School of Medicine, Milwaukee; past president and formerly chief of staff of the Sheboygan Clinic, of which he had been one of the organizers in 1921; instrumental in the organization of the Sheboygan Memorial Hospital, where he had been chief of staff and where he died June 22, aged 75, of coronary thrombosis and carcinoma of the bladder.

David von den Berg Le Mone ♂ Columbia, Mo.; born in Grand Rapids, Mich., July 21, 1904; Washington University School of Medicine, St. Louis, 1934; associate professor of roentgenology at the University of Missouri School of Medicine; specialist certified by the American Board of Radiology, Inc.; member of the Radiological Society of North America, Inc., and the American College of Radiology; chief of staff of Boone County Hospital; roentgenologist at Audrain Hospital, Mexico, St. Joseph's Hospital in Boonville and St. Mary's Hospital in Jefferson City; roentgenologist at the University Hospitals and the Ellis Fischel State Cancer Hospital; consulting roentgenologist at the State Hospital in Fulton and the Missouri State Penitentiary Hospital in Jefferson City; died in Glickner Hospital, Colorado Springs, June 11, aged 43 of coronary thrombosis.

Thomas Trovillo Sheppard ♂ Pittsburgh; born in Pittsburgh, Sept. 17, 1891; Columbia University College of Physicians and Surgeons, New York, 1918; associate professor of medicine at the University of Pittsburgh School of Medicine; president of the Allegheny County Medical Society; past president of the Pittsburgh Academy of Medicine; on the staffs of the Magee, Presbyterian and Eye, Ear, Nose and Throat hospitals; director of the Renziehausen Memorial Ward and Clinic at Children's Hospital; member and chief of staff at Western Pennsylvania Hospital, where he died July 5, aged 56, of encephalomalacia and arteriosclerosis.

Harry Anthony Keenan, Stoughton, Wis.; Rush Medical College, Chicago, 1903; served during World War I; lieutenant colonel, medical reserve corps, not on active duty; past president of the board of trustees of the Lake View Sanatorium in Madison; on the visiting staffs of the Methodist Hospital in Madison and Stoughton Community Hospital; member of the American Medical Association; in 1943 was selected by *Look* magazine as the typical home front physician in wartime; died in the Wisconsin General Hospital, Madison, July 1, aged 70, of cerebral thrombosis and diabetes mellitus.

James Edwards Poore ♂ Lieutenant Colonel, U. S. Army, retired, Washington, D. C.; born on Feb. 24, 1876; Bellevue Hospital Medical College, New York, 1897; veteran of the Spanish-American War; served on the Mexican border in 1916 and overseas during World War I; served with the Army of Occupation in Germany; postwar duties included service in China and the Philippines; entered the medical corps of the U. S. Army as a major in 1920; promoted to lieutenant colonel in 1937; retired Feb. 29, 1940; died in the Walter Reed General Hospital April 3, aged 72.

John Wesley Judd ♂ Ithaca, N. Y.; born in 1870; University of Vermont College of Medicine, Burlington, 1896; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; past president of the Tompkins County Medical Society; served as health officer and coroner; affiliated with Tioga County General Hospital in Waverly and on the staff of Tompkins County Memorial Hospital, where he was president of the staff and where he died June 6, aged 78, of heart disease.

Sarkis H. Abkarian, Pelham, N. Y.; University of the City of New York Medical Department, New York, 1889; died in the New Rochelle (N. Y.) Hospital June 24, aged 85, of cerebral thrombosis and arteriosclerosis.

Frank Benjamin Allison, Detroit; Detroit College of Medicine, 1905; member of the American Medical Association; affiliated with St. Luke's Hospital; died in the Harper Hospital June 30, aged 68, of coronary thrombosis.

Harry William Vernet Beals ♂ Mayview, Pa.; Temple University School of Medicine, Philadelphia, 1937; interned at the Hamot Hospital in Erie; member of the American Medical Association; served in the medical corps, Army of the United States, during World War II; associated with the Mayview Hospital; died June 26, aged 37, of coronary occlusion.

Richard Lorenzo Brown, Gloster, Miss.; Cincinnati College of Medicine and Surgery, 1889; member of the American Medical Association; died in McComb, June 18, aged 81.

William J. Burns, Glen Cove, N. Y.; Bellevue Hospital Medical College, New York, 1882; at one time health officer of the town of Oyster Bay; died in May, aged 89.

Edward Buehler Clement * Salisbury, N. C.; Jefferson Medical College of Philadelphia, 1906; served during World War I; died in Brunswick, Ga., June 18, aged 66, of coronary occlusion.

William Henry Chambers, Dierks, Ark. (licensed in Arkansas in 1903); died in Little Rock June 4, aged 69.

Corben Jay Decker * Surgeon, Lieutenant Commander, U. S. Navy, retired, Athens, Ga.; Jefferson Medical College of Philadelphia, 1880; entered the U. S. Navy in July 1906 and retired Aug. 31, 1907 for disability resulting from an incident of service; served during World War I; died in the General Hospital June 21, aged 86, of coronary thrombosis.

Walter den Bleyker * Kalamazoo, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1900; city physician in Kalamazoo from 1906 to 1908; past president of the Kalamazoo Academy of Medicine; at one time superintendent of Fairmount Hospital; died June 29, aged 71, of heart failure.

Frederick Luke Doucett, Weymouth, Mass.; Tufts College Medical School, Boston, 1900; member of the American Medical Association; for many years a member and formerly chairman of the board of health; died June 19, aged 78, of arteriosclerotic heart disease and cerebral hemorrhage.

Harry Baker Dow, West Springfield, Mass.; Baltimore Medical College, 1911; also a pharmacist; member of the board of health; died in the Springfield (Mass.) Hospital June 7, aged 71, of hypertensive cardiovascular disease and hemiplegia.

Stanley Waldo Dowling * Santa Cruz, Calif.; Cooper Medical College, San Francisco, 1912; died in the French Hospital June 26, aged 60, of carcinoma of the colon and coronary thrombosis.

Henry Cuttino Dozier, Ocala, Fla.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; member of the American Medical Association and the Southeastern Surgical Congress; fellow of the American College of Surgeons; past president of the Florida Medical Association; on the staff of Monroe Memorial Hospital; died in Lavallette, June 16, aged 69, of coronary occlusion.

Henry A. Dunphy * Palmer, Mass.; Baltimore Medical College, 1908; associate medical examiner for the Palmer district of Hampden County; served on the staff of Mercy Hospital in Springfield, where he died June 11, aged 66, of cerebral embolism.

Willis E. Elder, Columbus, Ohio; College of Physicians and Surgeons, Baltimore, 1895; formerly assistant chief medical examiner of the Ohio State Industrial Commission; died June 14, aged 81, of chronic myocarditis.

Carrie Innes Felch, Boston; Tufts College Medical School, Boston, 1906; member of the American Medical Association; died June 11, aged 75, of cerebral hemorrhage.

Elisha Flagg, Boston; Harvard Medical School, Boston, 1901; member of the American Medical Association; at one time treasurer of the Boston Medical Library; served on the staff of Massachusetts General Hospital; died June 8, aged 82, of heart disease.

W. Sturgis Frankenburger * Carmichael, Pa.; Jefferson Medical College of Philadelphia, 1911; served during World War I; formerly member of the school board; died June 1, aged 61, of coronary occlusion, arteriosclerosis and diabetes mellitus.

Henry Gray Glover, Jackson, Mich.; the Hahnemann Medical College and Hospital, Chicago, 1882; member of the American Medical Association; died June 21, aged 87, of coronary thrombosis.

James Mines Godfrey, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1904; Jefferson Medical College of Philadelphia, 1906; professor emeritus of anesthesia at the Hahnemann Medical College and Hospital of Philadelphia; member of the American Society of Anesthesiologists; died at Buck Hill Falls, Pa., June 30, aged 67, of carcinoma of the left lung.

Charles Augustus Goodrich * Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the New England Pediatric Society; past president of the Hartford County Medical Society; affiliated with Hartford Hospital, where he died June 13, aged 76.

Herschel Willman Goss, Indianapolis; Indiana University School of Medicine, Indianapolis, 1929; member of the American Medical Association; died May 21, aged 44, of cerebral hemorrhage and malignant hypertension.

William Brandon Gregory * Owego, N. Y.; Syracuse University College of Medicine, 1934; interned at the Binghamton City (N.Y.) Hospital; died in Lima, Ohio, June 12, aged 41, of injuries received in a plane crash.

Bert C. Hall, Pompeii, Mich.; Detroit College of Medicine, 1897; fellow of the American College of Surgeons; for many years associated with the R. B. Smith Memorial Hospital in Alma; died June 30, aged 80, of coronary embolus.

F. L. C. Helm * Baltimore; Georgia College of Eclectic Medicine and Surgery, 1912; formerly coroner of the Western District; on the staff of the Church Home and Hospital; died in Bon Secours Hospital June 7, aged 64, of thyrotoxicosis.

William Francis Hill, Jersey City, N. J.; Columbia University College of Physicians and Surgeons, New York, 1919; died in the Jersey City Medical Center June 20, aged 52.

Wilgus Alexander Holman, London, Ohio; Jefferson Medical College of Philadelphia, 1923; member of the American Medical Association; died June 10, aged 50, of coronary occlusion.

Vincent Joshua Horton * Calmar, Iowa; State University of Iowa College of Medicine, Iowa City, 1923; died in the Kahler Hospital, Rochester, Minn., May 31, aged 51, of embolism following an operation.

Edward Lamar Kelly, Repton, Ala.; Medical College of Alabama, Mobile, 1900; for many years county health officer; member of the American Medical Association; died June 5, aged 77, of cerebral hemorrhage.

John Timothy Kennedy * Medical Inspector, Commander, U. S. Navy, retired, Ogunquit, Me.; University of the City of New York Medical Department, New York, 1894; fellow of the American College of Surgeons; entered the U. S. Navy in 1900 and retired June 30, 1936; died in Naval Hospital, Portsmouth, June 3, aged 75, of coronary thrombosis.

Perry Firestone King * Alliance, Ohio; Western Reserve University Medical Department, Cleveland, 1904; fellow of the American College of Surgeons; affiliated with Alliance City Hospital; for many years closely identified with Mount Union College; died May 16, aged 70, of coronary occlusion.

Edgar Thorp Lassetter, Albuquerque, N. M.; Southern College of Medicine and Surgery, Atlanta, 1913; also a graduate in pharmacy; veteran of the Spanish-American War; a member of the state board of health and the board of trustees of the Lovelace Foundation for Medical Education and Research; vice president of the board of governors of the Lovelace Clinic; on the staff of St. Joseph Hospital; died June 27, aged 73, of cerebral hemorrhage.

Carl Copeland MacCorison * North Berwick, Me.; Dartmouth Medical School, Hanover, N. H., 1906; for many years superintendent of the North Reading (Mass.) State Hospital; died in the Henrietta D. Goodall Hospital, Sanford, June 3, aged 70.

John Harry Mallery, Trail, Ore.; Medical Department of the University of California, San Francisco, 1902; served during World War I; formerly affiliated with the U. S. Public Health Service reserve and on the staffs of various Veterans Administration hospitals; died June 30, aged 70, of heart disease.

Earle Clarence McBride * Terre Haute, Ind.; University of Louisville Medical Department, 1907; served as president of the Terre Haute Academy of Medicine and the city board of health; chief of medical service of St. Anthony's Hospital; died June 5, aged 73, of coronary occlusion.

Vincent Valens McCabe, Millbrook, N. Y.; Baltimore Medical College, 1901; died May 30, aged 73, of subdiaphragmatic abscess and toxemia.

Leo Thomas McCready, Boston; Tufts College Medical School, Boston, 1906; member of the American Medical Association; examining physician for the local Selective Service Board during World War II; died May 5, aged 68, of carcinoma of the larynx.

Edel Farnandis McIntosh Sr., Chattanooga, Tenn.; Meharry Medical College, Nashville, 1912; formerly city physician; died May 8, aged 60, of coronary occlusion.

John Franklin Mecluskey * Philadelphia; Maryland Medical College, Baltimore, 1911; on the staffs of the Episcopal and St. Mary's hospitals; died in the State Hospital, Marlboro, N. J., June 9, aged 71, of cerebral hemorrhage.

Henry Chalmers Mitchell, New Castle, Pa.; Jefferson Medical College of Philadelphia, 1903; member of the American Medical Association; medical examiner for the public schools; on the staff of the Jameson Memorial Hospital, where he died June 6, aged 69, of carcinoma of the liver.

Edward Everett Moore, Mount Airy, N. C.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891; died in Morganton May 26, aged 89.

John Aloysius Murphy, New Haven, Conn.; New York University Medical College, New York, 1897; on the staff of the Hospital of St. Raphael, where he died June 1, aged 76, of carcinoma of the transverse colon.

James Cheston Ogden, Long Beach, Calif.; State University of Iowa College of Medicine, Iowa City, 1930; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; on the staffs of Seaside Memorial, St. Mary's and Community hospitals; died May 25, aged 45.

Thomas L. Peacock, Lake Odessa, Mich.; Michigan College of Medicine and Surgery, Detroit, 1899; died May 27, aged 79, of valvular heart disease.

Clarence Fay Rinkle, New Hartford, N. Y.; Albany (N. Y.) Medical College, 1916; died May 30, aged 60, of pulmonary tuberculosis.

Gus Thompson Rumbaugh, Villisca, Iowa; Kentucky School of Medicine, Louisville, 1890; died in Clarinda May 1, aged 81, following a fracture of the right hip due to a fall.

George Walter Sapp, Newark, Ohio; Ohio State University College of Medicine, Columbus, 1911; member of the American Medical Association; died May 23, aged 61, of coronary occlusion.

Henry Snure, Los Angeles; University of Louisville School of Medicine, 1910; specialist certified by the American Board of Radiology, Inc.; fellow of the American College of Physicians; member of the American Roentgen Ray Society, Radiological Society of North America and the American College of Radiology; served during World War I; for many years on the staff of California Hospital; died in St. Vincent's Hospital May 17, aged 60, of cerebral hemorrhage.

George Elmer Strout, Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1901; formerly assistant professor of ophthalmology and otolaryngology at his alma mater; chief of staff, Wells Memorial Dispensary; member of the staffs of University, Eitel, Northwestern and St. Barnabas hospitals; oculist to the Minneapolis and St. Louis Railroad; died May 10, aged 75, of coronary thrombosis and myocardial infarction.

Martillus L. Todd, Major, U. S. Army, retired, Charleston, S. C.; Baltimore Medical College, 1897; at one time on the faculty of his alma mater; entered the medical corps of the U. S. Army as a major in 1920 and retired Jan. 31, 1931 for disability in line of duty; served during World War I; died in the Roper Hospital, May 30, aged 78, of carcinoma of the prostate.



LIEUT. HILERD W. JENKINS
(MC) U.S.N.R., 1914-1942



COMDR. MEINOLPH V. KAPPIUS
(MC) U.S.N.R., 1899-1946



CAPT. ALEXANDER A. ST. CLAIR,
M.C., A.U.S., 1911-1945

KILLED IN ACTION

Hilerd Westley Jenkins, River Forest, Ill.; aged 28; born in Forest Park March 6, 1914; University of Illinois College of Medicine, Chicago, 1938; interned at the Cook County Hospital in Chicago; member of the American Medical Association; entered active duty as a lieutenant in the medical corps of the U. S. Naval Reserve in December 1941 at the Naval Hospital in San Diego; on Dec. 9, 1941 assigned to the *Harris*, a hospital ship which during the ensuing months made numerous trips to Pearl Harbor; on Feb. 22, 1942 transferred to the destroyer U. S. S. *Warden* of the Pacific Fleet and in September 1942 to the U. S. S. *Moussen*, which on Nov. 13, 1942 engaged in battle with the enemy off Savo Island near Guadalcanal with great loss of life.

Meinolph Valen Kappius, Long Beach, Calif.; born in West Point, Neb. Feb. 23, 1899; Harvard Medical School, Boston, 1924; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; member of the American Medical Association and the Massachu-

setts Medical Society; formerly assistant in obstetrics at his alma mater and affiliated with Boston Lying-In and the Massachusetts General hospitals in Boston and the Free Hospital for Women; began active duty as a lieutenant commander in the medical corps of the U. S. Naval Reserve in April 1942; promoted to commander; officially reported missing in action Jan. 24, 1945, while attached to the U. S. S. *Kadasak Bay*; the plane in which he was flying was lost in the vicinity of the Admiralty Islands; the date of death was determined for administrative purposes within the Naval service to be Jan. 25, 1946, aged 47.

Correction.—Above is the correct photograph of Capt. Alexander A. St. Clair, M.C., A. U. S., who was reported missing in action on a flight over the Asiatic area July 13, 1943, and declared dead as of Dec. 19, 1945. In a number of copies of THE JOURNAL, September 18, page 227, Dr. St. Clair's obituary was printed under the picture of Comdr. Meinolph V. Kappius, M.C., U.S.N.R., whose obituary appears on this page.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 28, 1948.

Record Vital Statistics

During the war, with all its hardships and privations, British vital statistics actually showed an improvement. Now, when we are still suffering from the after-effects of the war in the form of scarcity and rationing of food, the same improvement continues. New low records for infant mortality, the general death rate and deaths from influenza in the first quarter of the present year are shown in the Registrar-General's returns, which have just been published. The provisional infant mortality rate was 41 per thousand live births, the lowest ever recorded for any first quarter. It was 11 below the figure for the same period last year and 25 below the average for the March quarters of the preceding ten years. It has already been announced that the provisional rate for the second quarter of this year is 31, the lowest on record for any quarter.

Births during the same period showed a rate of 18.9 per thousand compared with 17.8 for the preceding quarter and 22.8 for the corresponding quarter of 1947. The average birth rate for the first quarters of the five years 1942 to 1946 was 16.7. The death rate for the March quarter of 1948 was 12.4 per thousand, a new low record for that quarter. It compares with 17.1 for the corresponding quarter of 1947 and an average for the first quarters of 1942 to 1946 of 14.3. Deaths from influenza among civilians numbered only 644. The lowest number previously recorded in a first quarter was 1,470 in 1945, and the ten year average for first quarters of 1938 to 1947 was 3,800.

Two Healthy Young Cadets Die After an Eight Mile Training March

The country has been shocked by the deaths of two officer cadets, aged 19, during normal military training. They collapsed after an 8 mile route march partly over country and partly along roads, which had been arranged as part of their normal training. Each was in his thirteenth week of training. There was no specified time in which the march had to be completed. The syllabus, which had been carried out, included a 4 mile march without equipment but with rifles and a 2 mile march in battle order. Of the 32 members of the squad 3 were subsequently admitted to hospital, and of these the 2 mentioned died. At the coroner's inquest it was stated that the necropsies showed no signs of disease; the cadets were quite healthy. The only other factor was an exceedingly hot day. The verdict was death from heat stroke. No blame was attached to any one in command. But the War Office issued an order that exercises should be less stringent during the hot weather.

Shortage of Doctors and Excess of Applicants for Entry to Medical Schools

The National Health Service, which in one blow establishes medical socialism for the whole country, has come into force with remarkably little disturbance. Its efficacy, of course, depends on the quantity and quality of the doctors operating it. The former is certainly deficient. According to some only half the requisite number are available. There is no lack of entrants for the medical schools. The trouble is that the schools cannot immediately expand because laboratory and lecture room space is limited, as is the number of teachers. For each vacancy in the schools the applicants for entry range from 3 to 20, though this ratio exaggerates the excess because to an unknown extent some candidates apply to several schools. The difficult task of selection is carried out by the dean alone in half of the schools; at others by a committee. In an article devoted to

student selection, *Lancet* declares that this has become harder than ever. For the coming year one London school has 700 applicants for 65 places, another 600 for 100 and a third 400 for 20 places. The question, "Is there any good reason for rejection?" has given way to "Is there any good reason for acceptance?" Methods vary widely. The universities require candidates to complete forms of questionnaires and a confidential report is then obtained from a head master or employer. Primary selection is made and then final selection by interview. The universities are so filled with students of this country that candidates from overseas, whether from the Dominions or Colonies or from foreign countries, can seldom be accepted.

An Operating Theater for the Training of Students

The Nuffield Operating Theater, specially designed for the training of students and for experiments in new surgical methods, was opened at Johannesburg by Sir Hugh Cairns, professor of surgery at Oxford University, who is on lecture tour in South Africa. It seems to be the only one of the kind in existence. It was designed by W. E. Underwood, professor of surgery in the University of Witwatersrand. It will enable students to learn theater technic at their leisure, instead of in hospitals, where precision and speed are essential. It is a replica of the most modern hospital theaters.

ITALY

(From Our Regular Correspondent)

FLORENCE, Aug. 7, 1948.

Intoxication With Trinitrotoluene

At a meeting of the Association for Legal and Occupational Medicine presided over by Professor Palmieri, Drs. Caccuri and Sessa discussed intoxication by trinitrotoluene. They reported the results of research on 100 workmen who unloaded munitions in a dockyard near Naples. The workers were exposed to contact with trinitrotoluene either through the air because of the vapors, by the cutaneous route, or by the gastric route in the form of powder. The workmen had been exposed to trinitrotoluene for periods varying from three to ten months.

The symptoms reported were disturbances of the liver (pain, hepatomegaly, subicterus, or icterus); nervous disorders (headaches, vertigo, asthenia); disturbances of digestive apparatus (gastralgia, abdominal pains, anorexia, nausea, vomiting). Second in order were disturbances of the respiratory apparatus and of the cardiovascular apparatus (bradycardia, arterial hypotension).

Laboratory studies showed a positive Takata-Ara reaction and a positive Webster urine reaction in some of the cases, and an increase in azotemia in some cases. The examination of peripheral blood revealed a reduction of hemoglobin and a decrease of red blood corpuscles in nearly all persons studied, mild anisocytosis, then chylocytosis in many cases; normal or subnormal white blood cell counts; reduction of blood platelets in the great majority of the workmen and a definite increase in reticulocytes in 50 per cent of the persons studied. In nearly all persons there was a drop of the neutrophils containing pathologic granulations in the granulograms which were made according to the indications of Benda: the percentual number of intermediate form was predominant as compared to all the others; next in order were the normal forms, and last those of the extreme type. The pathologic neutrogranulogram may be considered as in close connection with the toxic injury to the peripheral blood and to the liver. The constancy of the observation makes it useful for early diagnosis of intoxication with trinitrotoluene and as an index of the degree to which the blood and the liver are affected.

At this meeting an order of the day was approved by which the Association of Legal and Occupational Medicine was held

to vote that occupational medicine should be included as an obligatory branch of study in the last biennium at the medical faculty. At the great universities, schools for specialists of occupational medicine should be instituted and hygiene should become an obligatory branch of study at the industrial and technical intermediate schools.

Discussion on Immunology

At the Congress of the Salerno Medical and Surgical Association, Professors Califano and Merlino presented reports on the subject "Blood in the Light of New Knowledge." Professor Califano discussed the development of the concepts of immunology, emphasizing the nature of antibodies. Concerning gamma globulin he stated that one may think of it as a protein, the origin and significance of which have to do exclusively with immunity, and that since antibodies are constituted by gamma globulin or by components closely related to it, the problem identifies itself with that of the formation of serum globulin. There may be no doubt about the significance of lymphatic tissue in serologic immunity, although one must recognize always the important part of the reticulohistiocyte system in the genesis of the humoral immunity. The concept of elaboration of antibodies in strict dependence on protein alimentation may be considered as firmly grounded. The only alimentary factor which has an effect on the contents of antibodies in the serum is the amount of aminoacids in the diet.

In discussing the problem of blood transfusions, Professor Merlino pointed out the modern views on agglutinogens and agglutinins, on the Rh factor, and on the Hr factor.

The New Commissioner for Public Health

Professor Cotellessa, member of Parliament, has been nominated High Commissioner for Hygiene and Public Health. He started his scientific career at the hospital for infectious diseases "D. Cotugno" in Naples, then devoted himself to pediatry and as an assistant at the clinic of Naples and other Italian medical centers, becoming an associate professor in this speciality. He founded the Abruzzo section of the Pediatric Association and organized a service of consultation and assistance for the National Maternity and Child Welfare in the Province of Chieti.

BUENOS AIRES

(From Our Regular Correspondent)

Aug. 15, 1948.

Thoracic Esophagectomy and Neoplasm of the Esophagus

In the National Academy of Medicine of Buenos Aires Prof. Dr. Ricardo Finochietto, together with Dr. J. Horacio Resano, related the results in 100 patients who survived this operation. Since the first transthoracic esophagectomy done by him thirty years ago the good results have been obtained with better anesthesia, a better understanding of the physiology of operative shock and a better knowledge of surgical pneumothorax. Essential are the unlimited operative transfusion (according to the necessities of the patient), avoiding anoxia, and also standardization of the operation, trained personnel, appropriate instruments and antibiotics.

Of the 100 patients with cancer 50 were operable, but only 25 were resectable. For resection the authors fix an arbitrary limit: 7 cm. in the roentgenologic picture; in cases of greater tumors the resection is laborious or absolutely impossible. Neither the age nor bad general conditions are considered as absolute contraindications. The actual mortality is 40 per cent.

The authors are of the opinion that the Thorek method leaves the patient practically invalid with few chances for normal deglutition; furthermore, 32 of the 33 patients who survived protested and wanted the artificial esophagus, only 1 being satisfied with the two fistulas. Seven of these 33 patients are

alive. The maximum time of survival after esophagoplasty is two years.

The other terminal method, anastomosis, permits an immediate restoration of the deglutitive function; 22 of 67 patients treated by this method died of recurrences; the longest time a patient survived was four years and seven months. Of the 67 patients 47 were operated on according to the method of Biondi; 9 that of Garlock, and 11 that of Lewis.

The authors consider that the prolongation of life is greatest with resection of the tumor with transthoracic anastomosis.

Thyroid Insufficiency Due to Inhalation of Sulfonamide Drugs

Prof. Dr. E. B. del Castillo and his collaborators, Dr. F. Irigoyen and F. Vivone, observed 2 cases of thyroid insufficiency after prolonged inhalation of "prontosil" (an azosulfamide) due to working circumstances; only one of the patients had goiter. Both improved with thyroid medication. Such cases can be considered as professional accidents. It seems convenient that specialists of the respiratory tract control the thyroid function during prolonged treatment with sulfonamide nebulization.

Excretion of Pituitary Gonadotropins During Amenorrhea

In order to make a classification on a physiologic basis Drs. A. de la Balze and J. Argonz employed the test of pituitary gonadotropin in the urine (modification of the biologic method of Zondek) in 83 amenorrheic women. According to 155 tests of the follicle-stimulating hormone which had been carried out, these patients could be divided in three principal groups, according to the amount of this hormone (increased, diminished or normal). This method is considered useful and permits one to state in a case of amenorrhea the different types of gonadal insufficiency, the stage of the gonadotropic pituitary function and as result of these items, the physiopathologic diagnosis of the amenorrheas.

Pan-American Congress of Gastroenterology

The subjects for discussion, at this congress were mentioned in *THE JOURNAL*, June 12, page 659. The American guests, Drs. H. Bockus, C. A. Broders and B. B. Crohn, lectured also in the National Academy of Medicine, which designated them honorary members. Their contributions to the congress have been much esteemed. Other prominent lecturers came from Brazil, Chile, France, Mexico, Spain and Uruguay. The deliberations on the main subject, "Chronic Cholecystitis without Stones," took place under the chairmanship of Prof. Dr. Carlos Bonorino Udaondo, President of the National Academy of Medicine. The Interamerican Association of Gastroenterology has been founded, with headquarters in Buenos Aires. The second congress will be held in 1950 in Rio de Janeiro, with the main subject "Pathology of the Small Intestine."

Brief Items

The Argentine Society of Microbiology has been founded, with Prof. Dr. A. Bachman as president.—Dr. J. Taiana has been designated titular professor of thoracic surgery, as successor of Prof. José Arce.—A commission of experts has been created for studying the administration of streptomycin, under the chairmanship of Prof. Dr. Roque A. Izzo, Interventor of the Faculty of Medicine of Buenos Aires.—The Argentine League against Epilepsy has been founded, as a branch of the International League against Epilepsy; president is Dr. Aquiles Garciso, whose address is Argentine Medical Association, calle Santa Fe 1171, Buenos Aires.—The *Revista de Sanidad Aeronáutica* is a new trimonthly periodical, edited by the Dirección General de Sanidad de la Secretaría de Aeronáutica.

Correspondence

FURTHER NOTES ON MEDICAL EDUCATION IN GERMANY

To the Editor:—In the May 1, 1948 issue of THE JOURNAL, page 5, Dr. Irving S. Wright reported on the present status of medical education in Germany and Austria. It might be of general interest to supplement Dr. Wright's discussion with information concerning German efforts to improve the reported shortcomings. Originating with a request from German sources (particularly from the frequently mentioned Dr. F. Volhard), it was my mission to serve as a consultant of our military government to assist in the rehabilitation and reform of German medical schools. The German origin of the request was an

FACULTIES

Appointment of part time clinical teachers, which has been more or less unknown in Germany in the past, is looked on with definite interest. The unfinished denazification procedures are a great obstacle in initiating such appointments as well as in sufficient staffing of the faculties in general. The denazification laws allow certain groups of persons to practice medicine, but do not allow them to teach. Other groups are permitted to do research, but again not to teach. Denazification laws are handled differently by the different occupation powers. German medical educators who are acceptable to one power are not acceptable to another. However, it is hoped that the denazification procedures will be finished this year. For security reasons, medical research projects must be submitted to the powers of occupation.

Comparison of Minimal Hospital Bed Requirements for American Teaching Hospitals Serving Medical Schools with Facilities Available in German Medical Schools*

Service	American Standard (No. of Beds)	German Schools (Number of Beds)					
		Erlangen	Frankfurt	Heidelberg	Marburg	München	Würzburg
Internal medicine.....	300	367	355	390	150	500	176
General surgery.....	300	267	264	450†	300‡	427‡	321
Psychiatry.....	300	200	265‡	207	85	310§	120
Pediatrics.....	150	130	85	386	145	265	200
Orthopedic surgery.....	60-80	20	250	635	104	397	280
Otolaryngology.....	60-80	90	107	..	..	200	80
Urology †.....	60-80	57	37	..	..	..	..
Ophthalmology.....	60-80	83	100	134	65	152	55
Neurology †.....	60-80	..	..	88	85	..	80
Gynecology.....	60-80	250	165	115	118	520‡	110
Contagious Diseases							
Adults.....	100	15	80	..	30	..	37
Children.....	..	..	165	..	..	..	..
Tuberculosis							
Adults.....	100	38	103	..	60	..	26
Children.....	..	..	36	..	..	..	..
Obstetrics **.....	250††	20	111	75	40	..	150
Dermatology.....	..	..	63	30.1	..	167	..
X-Ray.....	..	..	26	75	..	..	..
Dentistry.....	..	..	..	26	..	..	..
Total.....	2,000	1,522	2,610	2,903	1,101	3,088	1,691

* American standard based on annual enrolment of one hundred new students, with not more than one hundred students in any of the advanced classes.

† Including urology.

‡ Including one hundred beds for neurology.

§ Including neurology.

|| Combined with another service at Heidelberg, Marburg and München.

‡ Combined with another service at Frankfurt and München.

Including obstetrics.

** Combined with another service at München.

†† Or enough to provide at least fifteen deliveries per student.

invaluable help in overcoming the primary defense reaction toward suggestions proposed by one associated with medical education of an occupying power.

The main achievement of this mission was the establishment of an organization called Ausschuss für die Ausbildung und Fortbildung von Aerzten, an organization with aims similar to those of our Council on Medical Education and Hospitals. The present chairman of the Ausschuss is Prof. Kurt Felix, head of the Department of Vegetative Physiology at the University of Frankfurt am Main. This Ausschuss will meet every year on Ascension Day; its meetings are public, and participation is open to all members of the medical profession, including medical students. To everyone familiar with German medical education, the establishment of such an Ausschuss is a step forward that will make medical education in that country less autocratic and in general, of course, a step forward in making medical education in Germany a continuous problem, as it already is in this country. Founded only a year ago, the Ausschuss is still in its infancy.

STUDENT BODY

It is assumed that the overcrowding of German medical schools will be over by the end of this year. Paradoxical as it may seem, it will not be possible to limit the number of students and to introduce student quotas on the basis of available facilities before the present overcrowding has passed. The reason for this delay is that the overwhelming majority of the present medical students are veterans, and it can be readily understood that any new procedure impeding economic adjustment of returning veterans would be inadvisable. Several causes have contributed to the present overcrowding of German medical schools. There was no deferment of German medical students during the war. The individual medical student received his education in leaps and bounds (educational furloughs). Therefore, at the present time, there are a great number of undergraduate medical students in various stages of education. This number is that much greater because the number of medical students increased appreciably during the war. Finally, far fewer examinations are given in the German medical curriculum than in the medical

curriculum of this country, and, thus, undesirable students are not eliminated. No medical examiner will let a student fail an examination the second time, particularly under pressing economic conditions, if that student has spent six years in the armed forces and from two to four years in a medical school. Most German veterans fall into this group.

RECONSTRUCTION OF GERMAN MEDICAL SCHOOLS

Reconstruction is in progress. Taking 1:1,000 as the optimal physician-patient ratio from both the professional and economic point of view, as well as accepting the present number of physicians as amply sufficient and the period of thirty years as the working time of a German physician, one would need for the American Zone, with its 17,000,000 inhabitants, 17,000 physicians to be replaced every thirty years, i. e., about 566 in one year. With six medical faculties in the American Zone (Erlangen, Frankfurt, Heidelberg, Marburg, München, Würzburg), that figure would require an entry class of about one hundred (100) students each year. The table gives the figures of the approximate number of hospital beds for a teaching hospital with an annual class of one hundred (100) students suggested by our Council on Medical Education and Hospitals as compared with the January 1948 figures of the University Hospitals in the American Zone.

CURRICULUM

German medical educators are interested in starting a reform. They are hesitant in beginning their experiment immediately for the following reasons. At present, graduation from any German medical school is recognized for the whole of Germany, i. e., not only by the different states within each zone of occupation but also by the individual states of all zones. Therefore, for the people of Germany medical licensure is still a keepsake and symbol of a unified Germany. Reform of a single medical school only—so desirable in starting a reform—faces the difficulty that graduates of this school may not obtain the licensure in other German states, but solely from the state in which the medical school is located. It may be added that in the Russian Zone of occupation the three single German states have a much lesser independent status than in the Western Zones and that the so-called German Central Administration in the Soviet Zone (an equal of which does not exist in the Western Zones) faces a much simpler problem. Plans for a reform in the Russian Zone have been published in *Das Deutsche Gesundheitswesen* (1:65-67, 1946; 1:566-568, 1946, and 1:597-600, 1946). It is interesting to note that such an outstanding German scientist as the well known pharmacologist Dr. W. Heubner of Berlin emphasized the similarity between the Russian and the American plans. It may also be pointed out that the Russian military government has a special medical educational section in its organization, which seems to be a constructive agent.

The great problem of medical education in Germany at the present time is the problem of postgraduate training. Attempts for such a program are being made in several places. The newly established exchange program (Chief Civil Affairs Division of the Army, Special Staff, U. S. Army, Washington 25, D. C.) might perhaps be utilized in this connection.

The Unitarian Service Committee, which has sent so many memorable American teaching teams to different European countries, will send one team to Germany this year. German medical educators also hope that it will be possible to establish closer contact with medical institutions of the U. S. Army in Germany.

OTTO E. GUTTENTAG, M.D.

University of California Medical School,
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San Francisco.

SULFONAMIDE MIXTURES

To the Editor:—In the July 24 issue of THE JOURNAL there appeared a letter from Dr. David Lehr criticizing the conclusions of Zeller, Hirsh, Sweet and Dowling, who found that the disadvantages of using a mixture of sulfadiazine and sulfamerazine outweigh the advantages. Inasmuch as the article by Zeller and associates seemed to be a valid interpretation of carefully observed clinical phenomena, it is important to evaluate the usefulness of the sulfonamide mixtures from a theoretical point of view.

Although Lehr's observations on the independent solubilities of sulfonamide drugs are widely known and accepted, few persons realize how little there is to gain by using such mixtures. It is relatively simple to calculate just how much extra sulfonamide compound can be dissolved through the use of the mixtures.

Without added alkali, the urine of the average patient with a bacterial infection is rather acid. For the sake of simplicity, let us assume that the pH of the urine is 5.5, its volume 1,500 cc. and that acetylation of the sulfonamide compounds is complete. At pH 5.5, the solubility of the acetylsulfadiazine is 20 mg. per hundred cubic centimeters and the solubility of acetylsulfamerazine is 38 mg. per hundred cubic centimeters (Gilligan, D. R.; Garb, S.; Wheeler, C., and Plummer, N.: *Adjuvant Alkali Therapy in Prevention of Renal Complications from Sulfadiazine*, J. A. M. A. 122:1160, 1943). Therefore, if 3 Gm. each of acetylsulfadiazine and acetylsulfamerazine is excreted per day in 1,500 cc. of urine at pH 5.5, 300 mg. of acetylsulfadiazine and 570 mg. of acetylsulfamerazine will be in solution, while 2,700 mg. of acetylsulfadiazine and 2,430 mg. of acetylsulfamerazine will be in crystalline form. A total of 5,130 mg. of the sulfonamide mixture will be excreted as crystals, whereas if 6 Gm. of acetylsulfadiazine alone were excreted per day, 5,700 mg. would be in crystalline form.

Obviously, the difference between 5,130 and 5,700 is not a very significant one. Therefore, theoretical considerations corroborate the clinical findings of Zeller and associates.

In addition, it should be pointed out that the solubility of acetylsulfadiazine at a pH of 7.5 is 512 mg. per hundred cubic centimeters. Therefore, 7,680 mg. of it could be excreted in solution, without any crystal formation, in 1,500 cc. of urine at pH 7.5.

The use of adjuvant alkali therapy with sulfadiazine alone is a much more effective way of reducing complications from sulfonamide compounds than the use of sulfonamide mixtures.

SOLOMON GARB, M.D.

LAURENCE A. JANOFF, M.D.,
New York.

Medical Motion Pictures

FILM REVIEW

As Others See Us. 16 mm., black and white, sound, 525 feet (1 reel), showing time fifteen minutes. Produced in 1945 by Associated Filmmakers under a grant from the Becton, Dickinson Foundation for the American Hospital Association. Procurable on loan from: Department of Public Relations, American Hospital Association, 18 East Division St., Chicago 10.

This film tends to show the correct and the incorrect manner of receiving a patient on entrance to the hospital and providing for his comfort and care. It portrays the relationship of the hospital personnel with the patient and points out the importance of utilizing tact, kindness and consideration not only at the time of admission but throughout the entire period of hospitalization. There are a few sections in the film which may appear overemphasized; however, it should prove suitable for showing to all hospital personnel.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Privileged Communications: Statements Must Be Pertinent to Treatment.—This was an action by the administratrix of the estate of Edward C. Van Wic, deceased, to recover damages from the United States of America as a result of a collision between a motor vehicle operated by the deceased and a motor vehicle owned and operated by a rural mail carrier employed by the United States. The case was tried in the district court, N. D., Iowa, E. D.

Immediately following the collision the deceased was taken to a hospital at New Hampton, Iowa, and Dr. O'Connor, a practicing physician in that town, was called to attend him. At the trial, Dr. O'Connor was called as a witness by the defendant and was asked on direct examination as to what statements the deceased had made to him in relation to the collision and not connected with his treatment. The plaintiff objected to the testimony called for by the question on the ground that it concerned communications which are privileged under the Iowa law. The court reserved ruling, and Dr. O'Connor was permitted to testify that while the deceased was being treated he made the statement that "he did not see the vehicle which struck him." The question is as to the admissibility of this statement. Section 622.10, Code of Iowa 1946, provides in part as follows: "No practicing . . . physician, surgeon, or the stenographer or confidential clerk of any such person, who obtains such information by reason of his employment, . . . shall be allowed in giving testimony, to disclose any confidential communication properly entrusted to him in his professional capacity, and necessary and proper to enable him to discharge the functions of his office according to the usual course of practice or discipline. Such prohibition shall not apply to cases where the party in whose favor the same is made waives the rights conferred."

The federal courts follow the law of the forum as to communications privileged by state statutes. In the present case, said the court, Dr. O'Connor first saw the decedent in the emergency room at the hospital. He immediately began to administer to him, and the relation of doctor and patient then commenced. The statement in question was made by the deceased while he was being treated and, according to the doctor's testimony, at a time when the deceased was in a mentally clear condition. The statement was not, however, made in response to any question asked by the doctor, and the doctor admitted that the information conveyed by the statement was not necessary for purpose of treatment.

Statements of an injured person to his physician as to matters connected with the occasion out of which the injuries arose and observations by a physician of the patient and of the facts surrounding the injury would seem to stand or fall as privileged communications on their possible relevancy to treatment or on their relevancy as reasonably believed by either the physician or patient or both of them. While it is realized that it is common and natural human behavior for one in recounting a series of events which gave rise to an injury of a certain nature to include much data irrelevant to the ascertainment of the correct type of treatment to be administered, and while it is perhaps desirable that much latitude be allowed these statements as privileged communications to encourage disclosure of all facts necessary for treatment, an extension of the privilege to circumstances related by the patient which could have no possible bearing on the treatment of the injury or other professional service is beyond the plain language of the statute and the most liberal construction of it. It would not seem that whether or not the deceased saw the car which struck him could have any conceivable application to the determination of the proper treatment to be administered to him by Dr. O'Connor. It would not seem that such a revelation by the deceased could possibly have been considered by either communicant as reasonably necessary to the ascertainment of the injuries sustained and the correct treatment thereof. Nor

would it seem that the statement was reasonably incident to any conversation which would bear so directly on the ascertainment of correct treatment as to be included as a part of a whole communication privileged by the statute. The statement was undoubtedly part of the normal reaction of a person in stating or discussing details of an unusual and hazardous incident which had just endangered his life. While the extent of his injuries at the time the statement was made were not fully known, the disclosure in no way could be calculated to bring them to light. In the cases in which the Iowa Supreme Court has held privileged certain statements to or observations by a physician regarding the facts of a mishap from which injuries requiring treatment were sustained, those statements or observations have been interpreted as being necessary to ascertain the proper treatment or the rendering of other professional service, or as having in some degree been regarded by the patient or physician as bearing on such treatment or service. In the present case, said the trial court, the statement in question was in no way necessary to be known in order for Dr. O'Connor to "discharge the functions of his profession according to the usual course of practice and discipline," and the decedent could not have reasonably believed that such a statement could have had pertinency to his treatment. The court therefore held that the statement was not a privileged communication under the Iowa statute in question and it was allowed to be admitted in evidence. The judgment of the trial court was in favor of the plaintiff. *Van Wic v. United States*, 77 F. Supp. 22 (Iowa, 1948).

Dental Practice Acts: Employment by Unlicensed Person as Ground for Revocation of License.—The defendant dentist was charged with a violation of the New Jersey dental practice act and, after a hearing by the state board of registration and examination in dentistry, was found guilty and his license was suspended for six months. This ruling was reversed by the trial court on the ground that the statutory provision under which his license was suspended was unconstitutional, so the state board appealed to the Court of Errors and Appeals of New Jersey.

The dental practice act of New Jersey authorizes the revocation or suspension of a license to practice dentistry if the licensee has been found guilty of having "been employed by an unlicensed manager, proprietor, operator or conductor . . ." The question which we shall answer, said the court, is whether a license to practice dentistry may constitutionally be revoked on a justified finding that the licensee has submitted to employment as a practicing dentist by an unlicensed person. The dental practice act of New Jersey, in addition to the above mentioned provision, also provides that no person shall practice dentistry unless licensed to do so and that any person shall be regarded as practicing dentistry within the meaning of the act who is manager, proprietor, operator or conductor of a place where dental operations are performed. The constitutionality of these latter statutory provisions is not disputed, nor could it well be, the court continued, for the restrictions so imposed upon personal liberty of actions are within the police power of the state to provide for the general welfare of its people and to that end to prescribe all such regulations as in its judgment will secure or tend to secure them against the consequences of ignorance and incapacity as well as of deception and fraud. The practice of dentistry has points of close contact with that of medicine, which has long been the subject of careful supervision and control. Since it is within the power of the state to provide that no unlicensed person shall be the manager, proprietor or conductor of a dental office, continued the Court of Errors and Appeals, it seems to us to be also within the power of the state to provide, conversely, that a licensed dentist shall not be employed in a dental office by an unlicensed manager, proprietor or conductor and to enforce that prohibition by revoking or suspending the license of an offending licensee. Accordingly the court held that the provision of the dental practice act prohibiting employment of a licensed dentist by an unlicensed person was constitutional and that the state board of registration and examination in dentistry was authorized to suspend a license on such a ground.—*Taber v. State Board of Registration & Examination in Dentistry*, 59 A. (2d) 231 (N. J., 1948).

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

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Now and Then. Statistical Review of Progress of Midwifery During Last Twenty Years with Thoughts for Future. W. F. T. Haultain.—p. 733.

Benign Trophoblastic Cell Proliferation. C. G. Tedeschi and A. A. Matarese.—p. 758.

*Early Rising After Delivery. E. L. Cornell and J. J. Mullen.—p. 768.

*Acute Puerperal Mastitis: Clinical and Bacteriologic Studies in Relation to Penicillin Therapy. H. C. Hesseltine, C. G. Freundlich and K. Eileen Hite.—p. 778.

Ovarian Dysfunction in Young Women Treated with Low-Dosage Irradiation. Della G. Drips.—p. 789.

Fear, Important Etiologic Factor in Obstetric Problems. H. C. Walser.—p. 799.

*Spinal (Saddle Block) Anesthesia in Obstetrics. G. J. Andros, W. J. Dieckmann, P. Oula and others.—p. 806.

Use of Vaginal Smear in Gynecologic Service. L. L. Mackenzie, B. B. Weichler, J. C. DuBois and T. Neustaetter.—p. 821.

Preinvasive and Invasive Carcinoma of Cervix Uteri: Pathogenesis, Detection, Differential Diagnosis, and Pathologic Basis for Management. E. R. Pund, J. B. Nettles, J. D. Caldwell and H. E. Nieburgs.—p. 831.

Spectroscopic Detection of Hematin in Peripheral Blood: Aid to Diagnosis of Ruptured Tubal Pregnancy. F. E. Whitacre, H. D. Lynn, and D. B. Morrison.—p. 838.

Study of Incidence and Occurrence of Symptoms of Vaginal Trichomonads and Various Species of Yeast in Pregnancy. C. G. Johnson and Ruth Mayne.—p. 852.

Study of Use of Penicillin in Premature Rupture of Membranes. J. H. E. Woltz and T. S. Stashak.—p. 859.

Splenectomy in Pregnancy: Its Hematologic Indications and Obstetric Management. A. C. Barnes and C. A. Doan.—p. 864.

Sterilization Failure with External Migration of Ovum. I. F. Stein, M. R. Cohen and R. Elson.—p. 875.

Combined Local Infiltration Anesthesia and Pentothal Sodium Anesthesia in Cesarean Sections: A Preliminary Report. J. A. Fino and J. R. Eisaman.—p. 887.

Cervical Cancer with Metastasis to Breast. H. Speert and A. V. Greeley.—p. 894.

Early Rising After Delivery.—Cornell and Mullen report 1,000 patients admitted to Henrotin Hospital for delivery who represent a typical cross section of postpartum cases. They were allowed up on the sixth day or earlier, 80 per cent being up prior to the fifth day. These patients were in better condition at the time of discharge than if they had remained in bed for eight or more days. They were in a position to adapt themselves more readily to their daily household routine. Episiotomy wound healing was not adversely affected, nor was morbidity increased. No case of thrombophlebitis occurred in those delivered vaginally, which suggests that the tendency toward this complication was reduced. There was no case of uterine prolapse. The rate of involution of the uterus was increased. When necessary, because of overcrowding, the patient could be discharged from the hospital earlier than heretofore with a greater margin of safety. The postoperative course of the 53 cases of cesarean section included in this group was more nearly uneventful. Distention was infrequent. The necessity for catheterization and enemas was lessened when the patient was up to the toilet on the first postoperative day. One case of thrombophlebitis occurred thirty days after operation.

Acute Puerperal Mastitis.—Hesseltine and his co-workers report observations on 210 patients with suppurative puerperal mastitis observed at the Chicago Lying-in Hospital during the last thirteen and one-half years. Six of these patients belonged

to a group of 23 with acute puerperal mastitis treated with penicillin only. In these 6 symptoms had existed from twenty-four to one hundred and forty-four hours before the initiation of the penicillin therapy, whereas the longest period preceding treatment in the 17 nonsuppurative cases was forty hours. All 23 patients became afebrile within forty-eight hours, but this is not proof that the patient has been completely cured, as is shown by the occurrence of abscess in 6 patients during treatment. Penicillin resistance was studied in eleven strains of staphylococci isolated from suppurative mastitis. These grew in the presence of 0.006 to 6.25 units per cubic centimeter of penicillin. A significant proportion of these strains were resistant to the antibiotic, since four grew in at least 3.1 units per cubic centimeter. The local use of ointment containing penicillin on the nipple after nursing failed to affect the incidence of mastitis in postpartum patients. Nasopharyngeal cultures from mothers and babies were examined for *Staphylococcus aureus*. Twenty-one of 30 babies were found to harbor *Staph. aureus* during the first ten days of life, as were 20 of the 30 mothers. Ten of these strains were resistant to 0.5 or more units per cubic centimeter of penicillin in vitro. This resistance would appear to be a factor in the development of suppuration during treatment with penicillin and should be considered in the determination of "adequate" penicillin therapy. Infection of the breast may occur in lactating mothers from the patient herself or from the nursing infant. Although the importance of the nasopharynx is suggested, other possible sources of infection must be recognized. Late treatment, the resistance of some staphylococcus strains to penicillin and the localizing effect of the inflammatory tissue would seem to contribute to the progression of the disease process to suppuration. Increased dosage of penicillin seems desirable for infections with organisms of higher than usual resistance to the antibiotic.

Spinal Anesthesia in Obstetrics.—Andros and his co-workers practiced saddle block anesthesia in 719 parturient women between the ages of 18 and 42 years, at the Chicago Lying-in Hospital, during the first four months of 1947. The majority of the injections were made with the patient in her labor bed, placed in a sitting position over the side of the bed, bending forward and supported by an assistant. Spinal puncture was made at the level of the fourth lumbar interspace. The anesthetic agents used were difucaine hydrochloride in 514 instances, tetracaine hydrochloride in 115 cases, procaine hydrochloride in 27 and "metycaine hydrochloride" in 47. Seven additional patients received butethamine formate ("mono-caine formate"). In 24 of the 719 cases (3.3 per cent) there was failure to obtain anesthesia. Fourteen of these failures were converted to successes by repetition of the tap and the injection. In this series of 709 patients successfully anesthetized there were 346 primiparas and 363 multiparas. Anesthesia was instituted at 5 or 6 cm. of cervical dilatation in multiparas and near 8 cm. in primiparas. Other prerequisites to saddle block should be progressive labor, an effaced cervix, fixation of the fetal head and no cephalopelvic disproportion. The usual duration of complete uterine analgesia obtained from procaine hydrochloride and "metycaine" was from sixty to ninety minutes, with perineal anesthesia usually lasting nearly two hours. Tetracaine generally gave uterine analgesia of ninety to one hundred and five minutes, and perineal anesthesia between two and two and one-half hours. Only single blocks were used in the great majority of patients. Excluding the 14 patients receiving two taps for a single successful anesthetic, there were 65 patients who received the benefits of two or three successful injections; these patients were carried under saddle block anesthesia from three hours to slightly less than nine hours when delivery was completed. The procedure has been found to be safe, simple and precise. The degree of success has been high. The rate of operative intervention in delivery was not significantly increased. Complications attributable to the anesthetic procedure have not been a problem. The benefits to the fetus in early spontaneous respiration have been striking. There has been no increase in the fetal or maternal morbidity or mortality.

American Journal of Ophthalmology, Chicago

31:527-666 (May) 1948

- Fat Embolism Involving the Human Eye. M. H. Fritz and M. J. Hogan.—p. 527.
- Teaching of Ophthalmology (The Harry S. Gradle Lecture). D. Vail.—p. 535.
- Monocular Operation for High Divergent Strabismus. L. Weekers.—p. 541.
- Military Ophthalmology in the European Theater. D. Marshall.—p. 545.
- *Cancer and the Lens. E. Sachs and R. L. Larsen.—p. 561.
- *Recording of Visual Fields. M. Chamlin.—p. 565.
- Stereophotogrammetric Study of Anterior Segment of Eye. E. V. Bertotto.—p. 573.
- Ocular Syndrome of Cataract and Papilledema in Manifest Form of Parathyroid Deficiency. D. J. Lyle.—p. 580.
- Extraction of Cataract in Presence of Fluid Vitreous. D. B. Kirby.—p. 585.

Cancer and the Lens.—Sachs and Larsen say that cancer of the lens has never been observed. They inquire as to the anticarcinogenic factors which render the lens immune to cancerous invasion. They discuss factors of biologic, metabolic, physical and chemical nature—any or all of which may be responsible for the nonexistence of cancer in the lens.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

59:617-770 (May) 1948

- Cerebral Angiography: Clinical Evaluation Based on 107 Cases. J. R. Green and R. Arana.—p. 617.
- Roentgen Considerations of Pyelonephritis in Small Kidneys. E. P. Pendergrass, R. H. Chamberlain and F. P. Brooks.—p. 651.
- Roentgenologic Manifestations of Intrathoracic Injury Due to Missiles. W. A. Evans Jr.—p. 662.
- Pulmonary Cavities "Below the Diaphragm": Phenomenon Sometimes Seen in Pneumoperitoneum Treatment of Pulmonary Tuberculosis. P. Morgenstern and I. Pine.—p. 677.
- Gastric Tuberculosis: Case Report. H. R. Morris.—p. 682.
- Tumors of Small Intestine. Report of 2 Cases of Carcinoma of Jejunum. P. Delano.—p. 685.
- Simplified Method of Roentgen Pelviccephalometry. A. K. Wilson.—p. 688.
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- Agenesis of Vertebral Bodies—Cause of Dwarfism. Margaret J. Giannini, F. J. Borrelli and W. B. Greenberg.—p. 705.
- Isolated Dislocation of Lesser Multangular Bone. D. A. Sampson.—p. 712.
- Granulosa Cell Tumor of Ovary with Special Reference to Radio-sensitivity. R. D. Moreton and E. T. Luddy.—p. 717.
- Comparison of Intradermal and Ocular Methods of Testing for Sensitivity to Diodrast. A. G. Singer Jr.—p. 727.
- Roentgen-Ray Calibration of Photographic Film Exposure Meter. L. J. Deal, J. H. Roberson, and F. H. Day.—p. 731.

Annals of Western Medicine & Surgery, Los Angeles

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- Grave Prognosis of Appendicitis in the Aged. D. C. Collins.—p. 193.
- Anorectal Fistula: Historical Background and Modern Treatment. H. M. Young.—p. 206.
- Nonsurgical Treatment of Genital Relaxation: Use of Perineometer as Aid in Restoring Anatomic and Functional Structure. A. H. Kegel.—p. 213.
- *Solar Retinitis Due to Exposure During Eclipse. P. Tower.—p. 217.
- Solar Eclipse and Vision. D. M. Harwood.—p. 222.

Solar Retinitis Due to Exposure During Eclipse.

Tower says that within two weeks following a recent solar eclipse, 8 children presented themselves at the eye department of Yale Street Health Center with signs of retinal injury to the region of the macula, due to exposure to the sun. The symptoms of solar retinitis are a persistent after-image, positive scotoma and metamorphosia. Visual acuity is reduced. Ophthalmoscopic examination at first may reveal no abnormality or only a pale spot at the fovea centralis surrounded by a brownish ring. Subsequently, a translucent gray spot, suggestive of congestion and surrounded by a darker ring, may become visible in the center of the macula lutea. The pigment deposits become more pronounced and form a circular stippled area of gray around the fovea centralis. The damage proved to be irreversible in all children. Vision had not returned to its previous state after a lapse of several months. Neither smoked glasses nor photographic film afford sufficient protection for observing an eclipse. Ordinary sun glasses, when used for looking into the sun, transmit infra-red rays. The incidence of solar retinitis decreases with advancing age; school children are most likely to experience macular injury following observation of an eclipse.

Blood, New York

3:471-616, (May) 1948

- Chemical Specificity of Interaction of Diverse Human Plasma Proteins. E. J. Cohn.—p. 471.
- Span of Life of Red Blood Cell: A Résumé. Winifred Ashby.—p. 486.
- Studies on Free Erythrocyte Protoporphyrin, Plasma Iron and Plasma Copper in Normal and Anemic Subjects. G. E. Cartwright, C. M. Huguley Jr., Helen Ashenbrucker and others.—p. 501.
- Studies in Iron Transportation and Metabolism: VI. Absorption of Radio-Active Iron in Patients with Fever and with Anemias of Varied Etiology. Reuben Dubach, Sheila T. E. Callender and C. V. Moore.—p. 526.
- Osmetric Behavior of Normal and Abnormal Human Erythrocytes. G. M. Guest.—p. 541.
- Method for Determining the Form of Distribution of Red Cell Resistances to Simple Hemolysins. E. Ponder.—p. 556.
- Hemoglobin Healthy College Undergraduates and Comparisons with Various Medical, Social, Physiologic and Other Factors. C. W. Heath.—p. 566.
- Studies of Staphylocoagulase Reaction: Nature and Properties of Plasma Activator and Inhibitor. M. H. Kaplan and W. W. Spink.—p. 573.
- Some Hematologic Effects of Irradiation. W. Bloom and L. O. Jacobson.—p. 586.
- Effect of Radiation on Hemopoiesis: Is There an Indirect Effect? J. S. Lawrence, W. N. Valentine and A. H. Dowdy.—p. 593.
- Normal Blood Counts in Different Seasons. J. E. Holm and A. A. Videback.—p. 612.

Bulletin of Johns Hopkins Hospital, Baltimore

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- Total Intravenous Alimentation: Its Effect on Mineral and Bacterial Content of Feces. L. E. Duncan Jr., G. S. Mirick and J. E. Howard.—p. 515.
- British National Health Service. W. Jameson.—p. 529.
- *Familial Spread of Vaccinia with One Death: Isolation and Identification of Virus. Frieda G. Gray.—p. 538.
- Reduction of Intussusception by Hydrostatic Pressure: Experimental Study. M. M. Ravitch and R. M. McCune Jr.—p. 550.
- *Audiometry with Use of Galvanic Skin Resistance Response: Preliminary Report. J. E. Bordley, W. G. Hardy and C. P. Richter.—p. 569.

Familial Spread of Vaccinia.—Grey reports the spread of vaccinia from a recently vaccinated child to 3 other members of the family. The virus was isolated from 2 of these patients and was identified as vaccinia by neutralization and immunity tests. Sixteen successive rabbit passages were carried out with the virus isolated from the fatal case. Intracytoplasmic inclusion bodies were demonstrated in the cutaneous lesions of the fatal case and of inoculated rabbits.

Cincinnati Journal of Medicine

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- The Hippocratic Oath in Modern Dress. M. Levine.—p. 257.
- Antibiotics in Treatment of Venereal Diseases. J. E. Moore.—p. 263.
- Improved Housing and Slum Eradication. W. B. Bean, N. J. Gian-nestras and G. Lowenthal.—p. 271.

Journal of Allergy, St. Louis

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- Immunochemical Aspects of Allergy. D. H. Campbell.—p. 151.
- Thermolability of Artificially Stimulated Human Antibodies. W. B. Sherman, R. A. Cooke, S. B. Crepea and Lillian M. Downing.—p. 160.
- *Growth Patterns of Allergic Children: Statistical Study Using Grid Technique. M. B. Cohen and L. E. Abram.—p. 165.
- Induction of Asthmatic Attacks in Subjects with "Idiopathic" Asthma. F. C. Lowell and I. W. Schiller.—p. 172.
- Comparative Studies of Several Antihistaminic Drugs. C. E. Arbesman.—p. 178.
- Pharmacologic Characteristics of Neohetramine: New Antihistaminic Drug. J. V. Scudi, J. F. Reinhard and N. B. Dreyer.—p. 184.
- Device for Electrostatic Precipitation of Bacteria and Fungus Spores Upon Culture Plates. R. Rooks.—p. 200.
- Device for Electrostatic Precipitation of Pollen and Fungus Spores Upon A Counting Slide. R. Rooks.—p. 206.

Growth Patterns of Allergic Children.—Cohen and Abram raise the question of the existence of fundamental characteristics which distinguish allergic persons from the general population and their hereditary patterns. Previous studies have indicated that the allergic child is likely to be retarded, short for his age and light for his height when compared with average standards for height and weight. This has been thought to be due to the effects of the disease on appetite or to some actual disturbance in the utilization of food associated with the disease. It is possible that allergy occurs in children who have physical potentialities as regards body type and growth different from those of the nonallergic population, but until recently there have been no satisfactory methods for studying these possibilities.

The grid technic described by Wetzel makes such a study possible. From 503 observations on 150 allergic children seen in private practice compared with 622 observations on 102 non-allergic controls studied by the grid method, the authors draw the following conclusions: 1. Allergy occurs more frequently in children (especially boys) who, by inheritance, are constitutionally slender. 2. Allergy is a common cause of growth failure. 3. Control of active allergy is accompanied by a corresponding growth repair provided an adequate diet is available.

Journal of Bacteriology, Baltimore 55:581-768 (May) 1948. Partial Index

- Antibiotic Substances Separated from *Sumac*. H. J. Carlson, H. G. Douglas and H. D. Bissell.—p. 607.
Antibiotic Agents Separated from Root of Lace Leaved *Leptotamnus*. H. J. Carlson and H. G. Douglas.—p. 615.
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Influence of Temperature and Nutrients on Plaque Formation by Bacteriophages Active on *Escherichia Coli* Strain B. T. F. Anderson.—p. 659.
Cultural Characteristics of *Donaumia Granulomatis*. G. Rake and J. J. Oskay.—p. 667.
Effect of Sodium Fluoride on Metabolism of Certain *Mycobacteria*. R. J. Fitzgerald and F. Bernheim.—p. 677.
Metabolism of Biotin and Oxybiotin by *Lactobacillus Pentosus* 124-2. Keatha K. Krueger and W. H. Peterson.—p. 693.
Effect of Radioactive Phosphorus on Suspension of *Escherichia Coli*. C. F. Schmidt.—p. 705.
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Identification of Antibiotics by Means of Resistant Strains of Bacteria. P. G. Stanley.—p. 721.
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Preliminary Observations on Germination of Spores of *Bacillus Mycoides* in Nitrogen-Free Medium and Certain Properties of Transparent Cells. G. Kuayisi.—p. 753.

Journal of Gerontology, Springfield, Ill. 3:1-86 (Jan.) 1948. Partial Index

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Who Is Old? Death Rate in Japanese Concentration Camp as Criterion of Age. R. A. M. Bergman.—p. 14.
Maturity and Ageing. Course in Institute of Child Welfare of University of Minnesota. D. B. Harris.—p. 18.
Effects of Progesterone, Estradiol, Thyroid Hormone, and Androsterone on Artificial Premature "Climacteric" of Pure Gonadal Origin Produced by Ovariectomy in Rats. V. Korenshevsky and Vera E. Jones.—p. 21.
Effect of Arteriosclerosis on Dynamics of Hypertension in Aged: Preliminary Clinical and Pathologic Study of 150 Cases. F. D. Zeman and B. M. Schwartz.—p. 40.
Observations in Old Age Counselling Center: Preliminary Report on First 100 Clients. K. Stern.—p. 48.

Effect of Arteriosclerosis on Hypertension in the Aged.—Zeman and Schwartz made blood pressure studies on 150 elderly persons and correlated them with the findings at necropsy. Factors influencing blood pressure are evaluated with emphasis on the effect of the sclerotic aorta and its branches in producing the low diastolic pressures often found in aged persons. The patients were residents of the Home for Aged and Infirm Hebrews of New York City. The series included 66 men and 83 women, ranging in age from 60 years to 92 years. The patients were observed from a few days to twenty years. Blood pressure is mainly determined by four variables: the cardiac output, peripheral resistance, aortic elasticity and capacity. As age advances, there is a tendency for peripheral resistance to increase, for aortic elasticity to decrease, for aortic volume to increase and for cardiac output to decrease. A "normal" blood pressure in old age is not evidence of a normal cardiovascular system, but is the result of several of the aforementioned factors acting in opposite directions. Systolic hypertension is not to be sharply distinguished as a special form of elevated blood pressure, entirely normal for old age, and benign. Many cases of so-called systolic hypertension are in reality a form of systolic-diastolic hypertension in the sense that peripheral resistance is increased, but

the level of diastolic pressure is modified by changes in the great vessels. Systolic and diastolic hypertension in old age appears to make the persons who manifest it more liable to cerebral accidents and adds a burden to the heart. Malignant hypertension is rarely, if ever, observed in the aged. The level of blood pressure in old age should be supplemented by studies to determine the cardiac, cerebral and renal function and the degree of elasticity and dilatation of the aorta. Physiologic measurements of the cardiac output and peripheral resistance would be particularly desirable.

Journal of Nervous and Mental Diseases, New York 107:411-500 (May) 1948

- Bilateral Fractional Resection of Frontal Cortex for Treatment of Psychoses: Preliminary Report. R. G. Heath and J. L. Pool.—p. 411.
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Kentucky Medical Journal, Bowling Green 46:113-162 (April) 1948

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Medical Annals of District of Columbia, Washington 17:257-310 (May) 1948

- *Transorbital Lobotomy: Preliminary Report of 10 Cases. W. Freeman.—p. 257.
Statistical Analysis of Deaths Among Diabetics in District of Columbia for Period 42 Years (1903-1944 Inclusive). J. A. Reed.—p. 262.
Colposcopic (Papanicolaou) Method of Diagnosis of Uterine Cancer: Preliminary Report. J. K. Cromer, Lois I. Platt and T. Winship.—p. 272.
Neuritides of Mechanical or Pressure Origin. F. R. Riesenman.—p. 277.
Toothpick in Peritoneal Cavity: Report of Case. W. J. B. Orr.—p. 283.

Transorbital Lobotomy.—Freeman reports 10 cases of transorbital lobotomy followed for two years. There was 1 instance of left hemiparesis of four days' duration with complete recovery of power on that side. Later this patient had epileptic seizures. The other 9 patients suffered no ill effects. One of the patients died twenty months after operation of carcinoma of the pancreas. Of the 9 living patients, 5 are keeping house, 2 are employed, 1 is living at home and 1 relapsed eighteen months later. Transorbital lobotomy has a place in the treatment of mental disorders somewhere between shock therapy and major frontal lobotomy. It is to be considered in the case of schizophrenic patients who have been sick less than a year and who respond unfavorably to shock therapy. It may be tried in cases of involutional depression with agitation when shock therapy fails. If transorbital lobotomy produces only temporary results, standard frontal lobotomy may give permanent relief. Transorbital lobotomy does not seem to produce the undesirable effects that sometimes follow frontal lobotomy. Part of this is due to the less extensive character of the operation.

Military Surgeon, Washington, D. C.**102:335-426 (May) 1948. Partial Index**

- Medical Cooperation in Civil Defense. G. E. Armstrong.—p. 335.
 Training Activities of Army Medical Department. R. E. Duke.—p. 339.
 Medical Problems of Future Submarines. O. D. Yarbrough.—p. 342.
 Multiple Neurofibromatosis Involving Urinary Bladder. J. C. Kimbrough, J. N. Furst and D. K. Worgan.—p. 346.
 Successful Treatment of Case of Uremia by Means of Peritoneal Irrigation. R. H. Allbee and J. L. Mayfield.—p. 348.
 Treatment of Traumatic Aphasias of World War II at Birmingham General V. A. Hospital, Van Nuys, California. J. M. Nielsen, D. A. Schultz, Marria Lennon Corbin and Alcen Crittsinger.—p. 351.
 Neuropsychiatric Activities at Darnall General Hospital. T. C. C. Fong.—p. 365.
 Local Control of Epidemic Dengue Fever. R. P. Holdsworth, Jr.—p. 377.
 Improved Operation for Ingrowing Toenail. W. L. Gist.—p. 381.

Peritoneal Irrigation in Uremia.—Allbee and Mayfield treated 1 man aged 45 who had uremia due to acute renal failure of undetermined cause by peritoneal irrigation, using Ringer's solution and later distilled water and 5 per cent dextrose. Irrigation was instituted after patient had been anuric for nine days. It was continued for ten days; on the tenth day the kidneys had a twenty-four hour output of 1,700 cc. This method provided a substitute for the function of the kidneys by keeping the nitrogenous products from increasing and by even decreasing them a little over this ten day period until the damaged kidneys could regain function. The technical aspects of the method did not prove to be difficult, and there was no peritonitis of note. Peritoneal irrigation was a life-saving measure in this case; it is recommended that it be tried in similar cases.

Missouri State Medical Assn. Journal, St. Louis**45:321-400 (May) 1948**

- Cancer of Colon and Rectum: Current Trends in Surgical Management. J. Modlin.—p. 339.
 Tumor Seminar: Embryonal Adenoma of Thyroid with Blood Vessel Invasion. S. Warren.—p. 345.

45:403-464 (June) 1948

- Pulmonary Histoplasmosis. B. M. Stuart, J. W. Gardner, D. V. LeMone and A. C. Van Ravensway.—p. 417.
 Complications in Treatment of Fractures by External Skeletal Fixation. J. A. Key.—p. 422.
 Treatment of Acute Cholecystitis. J. H. O'Neil.—p. 425.
 Supernumerary Kidney with Ectopic Ureteral Orifice. J. J. Cordumier and W. C. Scrivner.—p. 430.
 False Positive Serologic Tests for Syphilis. H. L. Joseph.—p. 434.

New England Journal of Medicine, Boston**238:679-722 (May 13) 1948**

- Whither the Pegasus of Public Health? H. Emerson.—p. 679.
 Reconstruction of Burned Hand. R. C. Tanzer.—p. 687.
 Pheochromocytoma Coexisting in Adrenal Gland and Retroperitoneal Space, with Sustained Hypertension: Report of Case with Surgical Cure. E. J. Ganem and G. F. Cahill.—p. 692.
 Orthopedic Surgery: I. Conditions of Shoulder. C. B. Larson.—p. 697.
 Pelvic Abscess: Multiple Brain Abscesses.—p. 703.
 Malignant Teratoma of Anterior Mediastinum, Involving Pericardium, Pleura and Right Lung.—p. 706.

New Jersey Medical Society Journal, Trenton**45:223-272 (May) 1948**

- Cancer Program in New Jersey: IV. Financial Aid for Service to Cancer Patients. W. M. Wuester and O. R. Holters.—p. 226.
 Gastro-Intestinal Bleeding Produced by Ulcerated Meckel's Diverticulum. A. J. Barbano.—p. 232.
 Propyl Thiouracil in Hyperthyroidism. W. A. Crist.—p. 234.
 Severe Nasal Congestion Following Use of Naphazoline ("Privine") Nose Drops. W. G. Talmage.—p. 237.
 Evaluation of Immunity to Whooping Cough. G. A. Maggio.—p. 239.

Severe Nasal Congestion Following Use of Nose Drops.—Talmage reports the case of a woman, aged 62, who came to him complaining that her "nose was blocking up" continually. More than a year before, a specialist had prescribed a 0.1 per cent solution of naphazoline hydrochloride. The brand used was "privine hydrochloride" (N. N. R.), which was available in 0.1 per cent and 0.05 per cent solutions. The manufacturers advised that only the weaker solution should be used when prescribed for self application. In this case, it was intended for use during an acute infection of the upper respiratory tract, and the stronger (0.1 per cent) solution was prescribed. The patient continued the drops long after original need for them

should have disappeared. For more than a year she had been using 1 ounce a week. Her eyelids were puffy. Nasal mucosa and turbinates were red and extremely dry but appeared unusually congested and swollen. Believing that the long-continued use of the naphazoline might account for the nasal congestion and nervousness, the author instructed her to discontinue the nose drops. The feeling of apprehension and dependence on the naphazoline completely subsided after three weeks. The author mentions others who have observed numerous patients whose nasal congestion had been aggravated or maintained by naphazoline. Vasodilatation is probably a compensatory reaction to the initial vasoconstriction produced by this drug.

New York State Journal of Medicine, New York**48:817-960 (April 15) 1948**

- Choice of Procedure in Ophthalmic Plastic Surgery. A. E. Sherman.—p. 861.
 Observations on Neurogenic Bladder. W. F. Whitmore and L. M. Isaacs.—p. 869.
 Results of Radiation Therapy of Bladder Cancer. V. F. Marshall.—p. 875.
 Transurethral Treatment of Bladder Tumors. A. M. McLellan.—p. 876.
 Segmental Resection of Bladder for Cancer. J. Edwin Drew.—p. 877.
 Ureterocutaneous Anastomoses. G. A. Humphreys.—p. 879.
 Results of Ureterointestinal Anastomoses. M. Schnittman.—p. 882.
 Total Cystectomy. W. F. Whitmore Jr. and Neil P. Beal.—p. 884.
 Summary and Conclusions. V. F. Marshall.—p. 887.
 Streptomycin in Clinical Tuberculosis. C. Muschenheim, W. McDermott and P. A. Dunn.—p. 889.
 Diagnostic Difficulties in Intrathoracic Neoplasms. J. L. Pool.—p. 893.
 Diagnosis and Treatment of Minimal Tuberculosis. D. R. McKay.—p. 899.
 Isolated Nonpenetrating Injuries of Pancreas: 10 Year Review of Literature and Report of a Case. J. F. Hart and J. R. Lisa.—p. 903.
 Diagnosis of Sickle Cell Anemia. W. J. Doyle and J. Battaglia.—p. 907.

Northwest Medicine, Seattle**47:241-312 (April) 1948**

- Differential Diagnosis and Treatment of Leukemias. E. E. Osgood.—p. 257.
 Rheumatoid Spondylitis: Its Early Diagnosis and Treatment. S. E. Rees, E. A. Albers and G. B. Nichols.—p. 260.
 Roentgen Examination of Gastrointestinal Tract. M. C. Sosman.—p. 263.
 Ulcerative Colitis. E. B. Speir.—p. 266.
 Treatment of Ulcerative Colitis. W. L. Voegtlin.—p. 267.
 Surgical Aspects of Ulcerative Colitis: Indications for Surgical Intervention and Technique. C. E. MacMahon.—p. 269.
 Psychologic Aspects of Ulcerative Colitis. W. Y. Baker.—p. 271.
 Present Status of Peptic Ulcer Problem. D. M. Green.—p. 273.
 Polyps of Large Intestine. C. P. Schlicke.—p. 276.
 Acute Appendicitis After Middle Life. O. F. Lamson.—p. 279.
 Enuresis, A Common Sense Treatment. N. W. Klein.—p. 281.

47:335-392 (May) 1948

- Trauma to Kidney: Mechanism of Injury, Diagnosis and Management. J. H. Harrison.—p. 337.
 Treatment of Bladder Carcinoma by Total Cystectomy. C. D. Goodhope.—p. 341.
 Urinary Infections in Presence of Residual Urine. P. A. Rohrer.—p. 344.
 Physiologic Changes in Presence of Residual Urine. D. Parker.—p. 346.
 Differential Diagnosis of Amenorrhea. H. Lissner.—p. 349.
 Experiences and Technique in Vaginal Hysterectomy. A. F. Lee.—p. 350.
 Lingual Ectopia of Ovary. F. B. Packard and E. M. Rector.—p. 354.
 General Infections of Pregnancy. J. C. Brougher.—p. 356.
 Combined Extrauterine and Intrauterine Pregnancy. J. O. Rude.—p. 358.
 Prevention of Nasal and Personality Deformities Resulting from Injuries in Childhood. C. Firestone.—p. 358.

Ohio State Medical Journal, Columbus**44:439-560 (May) 1948**

- Practical Surgical Points in Strabismus. M. P. Motto.—p. 465.
 Ménière's Disease. W. C. Thornell.—p. 469.
 Severe Allergic Sensitization to an Estrogenic Cream. H. N. Cole Jr., W. L. Marmelzat and A. E. Walker.—p. 472.
 Acute Gallbladder. R. M. Zollinger and H. T. Gross.—p. 473.
 Treatment of Varicose Veins During Pregnancy by Combined High Saphenous and Segmental Ligations Followed by Injection of Residual Varicosities. P. J. Shank.—p. 477.
 Rorschach Test in Clinical Psychiatry. H. S. Evans and Grace M. Collet.—p. 482.
 Whence Came You? F. A. Riehel.—p. 487.
 Initial Symptoms of Pollenosis at an Advanced Age. McKinley London.—p. 489.

Pennsylvania Medical Journal, Harrisburg**51:729-816 (April) 1948**

- Practical Considerations in Management of Arthritis. R. H. Freyberg.—p. 729.
Management of Allergic Disease of Respiratory Tract in Children. G. B. Logan.—p. 739.
Philosophy of Medical Service Plan. F. L. Feierabend.—p. 747.
Rhinoplastic Procedures to Establish Normal Physiologic Nasal Function. M. S. Erser.—p. 749.
Primary Carcinoma of Liver. H. F. Hunt and S. W. Berkheiser.—p. 755.
Trochanteric Fractures of Femur Treated by Internal Fixation. G. Hammond.—p. 759.
Bone Marrow Infusions in Infancy. J. C. Williams and J. Lockhart.—p. 767.
Significance of Hypertension in Pregnancy. L. F. Ritmiller, I. L. Messmore and R. E. Nocodemus.—p. 771.

51:817-944 (May) 1948

- Gastric Carcinoma. S. F. Marshall.—p. 841.
The World Medical Association and Its Implications. E. L. Bortz.—p. 848.
A Newspaperman Looks at the Medical Profession. J. F. James.—p. 851.
Revising the Dormant County Medical Society. A. Laird.—p. 857.
Cataract Extractions Under Intravenous Pentothal Sodium Anesthesia. C. H. Jacobs.—p. 861.
Some Considerations Regarding Treatment of Hemangiomas. R. H. Chamberlain and E. P. Pendergrass.—p. 867.
Mistreatment of Common Skin Diseases. M. H. Cohen.—p. 870.
Management of Premature Labor. H. A. Power.—p. 875.
Immediate Care of Premature Newborn Infant. H. W. Erving.—p. 877.
Social Psychiatry. L. M. A. Maeder.—p. 880.

Public Health Reports, Washington, D. C.**63:593-636 (May 7) 1948**

- Studies of Fungus Antigens: III. Sensitization of Normal Animals with Skin Test Antigens. A. Howell Jr.—p. 595.
Isolation of Pathogenic Fungi from Experimentally Inoculated Guinea Pigs. A. Howell Jr.—p. 602.

63:637-672 (May 14) 1948

- Illness Among Infants, with Comparative Mortality Data. S. D. Collins.—p. 637.

63:673-704 (May 21) 1948

- State-Local Grant-In-Aid Formulas. A. L. Chapman.—p. 673.
Changes in Age Selection of Fatal Poliomyelitis. A. G. Gilliam.—p. 677.
Studies of Acute Diarrheal Diseases: Immunization in Shigellosis. A. V. Hardy, Thelma DeCapito and S. P. Halbert.—p. 685.
Sickness Absenteeism Among Industrial Workers, Third and Fourth Quarters of 1947: Trend of Disabling Morbidity, 1938-1947. W. M. Gafaefer.—p. 689.
Distribution of Endemic Typhus in Rats in Lavaca County, Texas. J. V. Irons, J. N. Murphy Jr. and D. E. Davis.—p. 692.

Review of Gastroenterology, New York**15:349-438 (May) 1948**

- Syphilis of Stomach: Report of Case with Gastroscopic Findings and Intraoperative Photographs in Color. H. A. Rafsky, M. Weingarten and W. F. Herzig.—p. 359.
Pitfalls in Diagnosis of Jaundiced Patient: Intrahepatic Arrest of Bile Flow. F. Steigmann and H. Popper.—p. 367.
Abdominal Epilepsy. M. T. Moore.—p. 381.
Studies on Dissolved Mucin (Mucoprotein) of Gastric Juice: I. Preliminary Tests and Rationale for a New Colorimetric Quantitative Method for Determination of Dissolved Gastric Mucin. G. B. J. Glass and L. J. Boyd.—p. 396.

Diagnosis of Jaundice.—According to Steigmann and Popper, one of the main pitfalls in the differential diagnosis of jaundice is presented by primary hepatitis with intrahepatic arrest of bile flow. In these patients, the clay-colored stools, although usually pointing to "surgical" jaundice, are due not to any mechanical obstruction in the extrahepatic bile passages but to some pathologic changes within the liver itself—"medical" jaundice. The absence of bile from the intestine is established by examination of the feces and urine on consecutive days. In a series of 212 patients with jaundice due to hepatitis, 36 (17 per cent) failed to show urobilinogen in their urine or feces for three to forty-one days, with an average of eleven days. This phenomenon was found in all age groups, although it was predominantly encountered in patients between 40 and 50 years of age. The absence of bile from the intestine appears to be somewhat more common in the toxic than in the infectious type of hepatitis. It seems frequently to be encountered in cases of hepatitis following arsenical injections and after ingestion of cinchophen. In cases of cirrhosis complicated by acute damage to the liver, it may be an additional complicating fac-

tor. Awareness of this condition and careful and prolonged observation of patients with hepatitis with this phenomenon, by clinical and laboratory means, will ultimately lead to correct diagnosis and management. It is advisable to do an exploratory operation in any patient with prolonged arrest of bile flow in whom the slightest possibility of an extrahepatic obstruction remains. The possible mechanisms for intrahepatic arrest of bile flow are actual obstruction in the region of the canal of Hering in some, and functional changes in the terminal bile ducts in other cases.

Abdominal Epilepsy.—Moore reports 3 cases of abdominal epilepsy with paroxysmal abdominal pain and disturbed motility of the gastrointestinal tract in women aged 50 and 32 and in a boy aged 12 who showed satisfactory response when placed on anticonvulsant therapy. Each of the cases satisfied either all or most of the following criteria necessary to establish the diagnosis of abdominal epilepsy: (1) the patients must be examined by all available methods to rule out intrinsic disease of the pelvic, abdominal and thoracic viscera, morbid involvement of the spinal cord or peripheral nerves and psychosomatic projection mechanisms; (2) historical data regarding the possible existence of cerebral disease or dysfunction should be uncovered; (3) the behavioristic occurrence of the pain should adhere to the pattern of epilepsy; (4) the presence of associated epileptic phenomena, either preceding or during the episodes of abdominal pain, will form corroborative evidence of the nature of the disorder; (5) positive neurologic signs and findings from laboratory studies including cytologic and chemical, roentgenologic studies of the skull and electroencephalographic studies, indicating the existence of a cerebral structural or physiologic disorder, should be in evidence; (6) favorable effects of anticonvulsant drugs on the occurrence of abdominal pain and/or abnormal gastrointestinal motility should be exhibited, and the influence of these drugs on the electroencephalogram should in most instances parallel the clinical results. Absence of abnormal cerebral discharge as observed in the electroencephalogram may be encountered in patients with abdominal epilepsy as in epilepsy of all types.

South Carolina Medical Assn. Journal, Florence**44:113-154 (April) 1948**

- Acute Porphyria. R. R. Coleman.—p. 117.
Carcinoma of Terminal Ileum: Case Study. K. M. Lippert, H. Potozky and L. E. Nolan.—p. 123.
Mental Hygiene Clinic in Spartanburg. J. M. Pratt.—p. 127.

Southern Medical Journal, Birmingham, Ala.**41:389-486 (May) 1948. Partial Index**

- *Multiple Calcinosis Associated with Hypervitaminosis D.: Report of Case. G. McLean and L. Lebo.—p. 389.
Important Factors in Surgical Removal of Ureteral Calculi. H. W. McKay, H. H. Baird and K. M. Lynch.—p. 394.
Factors Influencing Healing of Anorectal Surgical Wounds. J. McGivney.—p. 401.
*Venereal Granulomas: Comparative Study of These Diseases in Florida. W. W. Wilson.—p. 412.
Use of Interfacet Vitallium Screws in Hibbs Spine Fusion. L. D. Baker and W. A. Hoyt Jr.—p. 419.
Temporal Arteritis with Associated Optic Atrophy. W. B. Anderson, W. M. Nicholson and Lalla Iverson.—p. 426.
Principles of Therapy in Allergic Diseases. W. C. Spain.—p. 439.
What Can We Expect from Electro-Sleep (Electro-Shock) Treatment? C. S. Holbrook.—p. 444.
Complete Industrial Health Service at Atomic Energy Laboratory. Jean S. Felton.—p. 449.
Importance of Physical Medicine Rehabilitation as Demonstrated by Experience of Veterans Administration. A. R. Dawson and A. B. C. Knudson.—p. 455.
Pseudomonas (Pyocyaneus) Infection of Gastro-Intestinal Tract in Infants and Children. A. J. Schaffer and Ella H. Oppenheimer.—p. 460.
Spinal Anesthesia in Obstetrics. M. C. Beck and R. C. Ball.—p. 467.
Cesarean Section: Results in 533 Consecutive Operations. C. Bachman.—p. 473.
Prevention of Heat Prostration by Use of Vitamin C. W. L. Weaver.—p. 479.

Multiple Calcinosis with Hypervitaminosis D.—McLean and Lebo review the history of a man, aged 56, who was first seen by them in April 1945, when he complained of tiredness, loss of weight, lack of concentration, urinary frequency, insomnia, and pain in the neck, shoulders, knees, ankles and feet. He had been treated for hypothyroidism, prostatitis and arthritis. He had taken six capsules daily for the previous two and a half years, or a total of 150,000 international units of vitamin D

and 180,000 units of vitamin A daily. One month before, he had noticed a lump appearing in his right gluteal region, and about the same time painful swellings of his left ring finger, thumb and wrist. Incision into the right gluteal region exposed multilocular cysts which contained a chalky material. The cyst on the left ring finger was also incised and the same type of material was obtained. The presence of calcium was ascertained. Withdrawal of vitamin D was followed by disappearance of symptoms. The authors feel that this is a case of renal insufficiency, anemia and metastatic calcinosis caused by excessive vitamin D therapy. If severe toxic manifestations of vitamin D poisoning are to be avoided, the patients must be subjected to closer observations, periodic laboratory and roentgen examinations and to questions as to whether they are taking vitamin therapy, especially those patients having an unexplainable renal insufficiency, anemia, or calcific deposits in the blood vessels or soft tissues.

Venereal Granulomas.—Wilson lists the total number of cases of chancroid, granuloma inguinale and lymphogranuloma venereum reported to the Florida State Board of Health from January 1942 to August 1947. Florida had 12.4 per cent of the cases of granuloma inguinale reported in the entire country. Laboratory studies and intradermal tests have their limitations in the diagnosis of diseases of this group, but they play an important part in the differential diagnosis. Penicillin has no specific antibiotic action on the etiologic agents in these three diseases. Streptomycin is the most encouraging form of therapy for the rapid healing of patients with granuloma inguinale; this method of treatment has been successful when other methods have failed. Although streptomycin is expensive, the rapid healing it produces and the fact that it aids in the control of this disease seems to justify the expenditure. Sulfathiazole was the drug of choice in the medical treatment of chancroid and lymphogranuloma venereum.

Southern Surgeon, Atlanta, Ga.

14:289-350 (May) 1948

- Residual Stones in Cystic Duct Following Cholecystectomy. A. E. Grimes.—p. 289.
Acute Abdomen. C. N. Carraway.—p. 294.
Fractures of Femur: Neck and Trochanteric Region. J. T. Ellis, S. W. Windham and S. G. Latiolais.—p. 309.
Propylthiouracil in Treatment of Goiter. J. G. Dees.—p. 323.
Surgical Treatment of Hypertension. J. E. Thompson, M. H. Harris and W. C. Dine.—p. 326.
Treatment of Anuria by Peritoneal Irrigation. W. H. Cave.—p. 338.
Masquerading Hyperthyroid Patient. S. J. Campbell and R. C. Green.—p. 342.
Controversial Problems in Surgical Treatment of Cancer of Rectum I. Abell, B. T. Beasley and others.—p. 348.

Surgery, St. Louis

23:735-866 (May) 1948

- Treatment of Short Stricture of Esophagus by Partial Esophagectomy and End-to-End Esophageal Reconstruction. R. E. Gross.—p. 735.
Leiomyoma of Esophagus and Cardia of Stomach. R. A. Kenworthy and C. Stuart Welch.—p. 745.
An In Vivo Method for Evaluation of Detergents and Germicides. C. A. Hufnagel, C. W. Walter and R. W. Howard.—p. 753.
Cholelithotomy. R. W. Buxton and L. B. Burk.—p. 760.
*Myotonia Acquisita Due to Chronic Calculous Cholecystitis and Cured by Cholecystectomy. D. Puppel and Edith Kline.—p. 768.
*Herpes Zoster and Surgical Abdomen. L. H. Boshier Jr. and C. Williams Jr.—p. 773.
Mesenteric Thrombosis. J. E. McClenahan and B. Fisher.—p. 778.
Observations on an Absorbable Powder to Replace Talc. E. L. MacQuiddy and J. P. Tollman.—p. 786.
Magnuson-Stack Procedure for Recurrent Dislocations of Shoulder. N. J. Giannestras.—p. 794.
Plaster Traction Splint for Compound Comminuted Fractures of Tibia and Fibula. M. R. Urist, L. Ries and T. B. Quigley.—p. 801.
Subcutaneous Rupture of Brachioradialis Muscle. A. T. Hamilton.—p. 806.
Four Metachronous Malignant Lesions of Colon: Unusual Case. M. Edwards.—p. 808.
Benign Lymphoma of Rectum. Irene Y. Li.—p. 814.
Gastrostomy: Statistical Review of 199 Cases. D. R. Cooper and R. W. Buxton.—p. 821.
Improved Drain for Peritoneal Lavage. S. S. Rosenak and G. D. Oppenheimer.—p. 832.

Myotonia Acquisita Cured by Cholecystectomy.—According to Puppel and Kline myotonia acquisita is a rare muscular disorder characterized by increased muscular irritability and contractility associated with diminution in the power of relaxation. It constitutes a syndrome which includes the

myotonic disorder of movement with stiffness, tension and spasm in the voluntary muscles when movements are initiated, the myotonic reaction with normal mechanical and electrical excitability of the motor nerves, but an increased mechanical and electrical excitability of the muscles, and muscular hypertrophy. The acquired form (myotonia acquisita or Talma's disease) has been differentiated from the congenital form (myotonia congenita or Thomsen's disease) although these may be manifestations of the same pathologic process, which, however, is not fully understood. The acquired form has been described after trauma, dysentery, gastroenteritis, alcoholism, lead poisoning, tuberculosis, and typhoid. Although the disease tends to improve spontaneously, search for the causal factor may be advisable in order to reduce the duration and the severity of the process. The authors present a detailed history of a woman in whom myotonia apparently followed chronic calculous cholecystitis with an associated chronic hepatitis and was cured after cholecystectomy, choledochostomy and adequate treatment of the hepatitis.

Herpes Zoster and Abdominal Symptoms.—Boshier and Williams say that, although investigators have pointed out that herpes zoster may mimic intra-abdominal disorders, the close simulation of conditions requiring surgical intervention is not appreciated. The authors report the case of a 15 year old boy who was admitted to the hospital with a presumptive diagnosis of perinephric abscess in which the diagnosis of segmental neuralgia seemed justified. There was tenderness in the left lower quadrant, flank and costovertebral angle. The tenderness did not increase on deep palpation. It was still present on examination with the abdominal muscles tensed, thus indicating that most of the pain at least was parietal (positive Carnett's sign). After an intercostal nerve block in the region of the tenth and eleventh thoracic nerves posteriorly, the pain and hyperesthesia disappeared. The authors report 2 other cases simulating surgical disease in which there was evidence of herpes zoster. In the first of these, the additional diagnosis of appendicitis was made; a posterior intercostal nerve block would have permitted more accurate evaluation of the apparent deep evaluation of the apparent deep tenderness. The application of Carnett's test, that is, palpation with the abdominal musculature tense, would probably have suggested that the pain and tenderness were predominantly parietal. In the second case, the long interval of ten days between the onset of symptoms and the appearance of the rash postponed the correct diagnosis. The authors stress that Carnett's test is a useful adjuvant in the examination of a patient with abdominal pain.

Texas State Journal of Medicine, Fort Worth

43:66 (May) 1948

- Surgery of Major Blood Vessels. H. D. Adams.—p. 10.
Important Considerations in Diagnosis and Treatment of Peripheral Vascular Disease. H. E. Nelson.—p. 15.
Treatment of Pulmonary Embolism by Ligation of Superficial Femoral Veins; Report of 7 Cases. H. N. Leopold.—p. 18.
Cardiovascular Syphilis. R. H. Kampmeier.—p. 23.
Symptoms of Coronary Artery Disease Masquerading as Gastro-Intestinal Symptoms. R. W. Rissler.—p. 28.
Carotid Sinus Syndrome: Its Importance in Clinical Medicine. R. L. Cope and V. C. Baird.—p. 30.
Uses and Abuses of Coagulation and Bleeding Time Preceding Tonsillectomy. W. L. Sheppard.—p. 35.
Epistaxis. B. P. Woodson.—p. 38.
Special Diagnostic Procedures in Cardiac Evaluation. C. F. Shaffer.—p. 40.
Office Procedure in Diagnosis of Squint. A. E. Meisenbach Jr.—p. 43.
Management of Intra-Ocular Foreign Bodies. B. B. Hutchinson.—p. 48.

West Virginia Medical Journal, Charleston

44:97-140 (May) 1948

- Venous Thrombosis of Lower Extremities with Particular Reference to Treatment. J. D. German.—p. 97.
Present Status of Ureterointestinal Anastomosis: Case Report. A. J. Oliker.—p. 101.
Treatment of Graves' Disease. K. Nelson.—p. 107.

44:141-176 (June) 1948

- West Virginia is Ready for a Four Year Medical School. T. Bess.—p. 141.
Cardiac Changes in Arteriovenous Fistula: Case Report. B. Bradford Jr. and A. J. Beatty.—p. 149.
Practical Aspects of Surgical Care. R. Zollinger and C. Artz.—p. 151.
Urinary Tract Infections. J. W. Merricks.—p. 157.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London
60:121-158 (April) 1948

*Vitamin D₂ in Treatment of Cutaneous Tuberculosis. J. Charpy.—p. 121.

Vitamin D in Treatment of Cutaneous Tuberculosis. G. H. Dowling.—p. 127.

Vitamin D Therapy in Cutaneous Tuberculosis. S. Lomholt.—p. 132.

Leprosy in British Nationals. S. Gold.—p. 139.

Vitamin D₂ in Cutaneous Tuberculosis.—The principle of the treatment in which Charpy of Dijon, France, has been interested for the past seven years consists in administering chemically pure vitamin D₂ by mouth in alcoholic solution, in single doses of 15 mg. (600,000 international units), repeated from twice to once a week during many consecutive months. The author reviews personal experience during six years in regard to 150 cases of tuberculous lupus followed from beginning to end and about 60 other cases followed periodically. Vitamin D₂ therapy has changed the usual prognosis of lupus vulgaris. In the favorable cases the therapy influences the inflammatory reaction in the skin. The tuberculous infiltrations, the lupomas, are the most resistant elements. They become paler, but it takes weeks or even months before they disintegrate, separate and finally disappear. It is exceptional to be obliged to supplement the internal treatment by local destruction of residual lupomas. Excellent results are obtained in ulcerated lupus; a little slower in the tumid forms and in the edematous and congestive type; slower still in the erythematonodular lupus ruber planus. Lesions in the mucous membrane disappear rapidly. Adenitis and lymphangitis disappear for the most part during treatment. It is sometimes useful to puncture "cold" abscesses. The therapeutic effect should always be detectable from the beginning of the treatment and should become obvious by the fifteenth day. Should there be no result at that time, lack of absorption, biliary insufficiency, inadequate tissue permeability through an excess of sodium chloride, or the coexistence of syphilis must be considered as factors that may be responsible for the failure of the treatment. Skeptics, although conceding amelioration of lupus, have questioned actual cures, but the author insists that he has seen many patients in whom cure has persisted for three to five years.

British Journal of Radiology, London

21:157-210 (April) 1948. Partial Index

Ossifying Hematomata and Other Simple Lesions Mistaken for Sarcomata. J. F. Brailsford.—p. 157.

Significance of Certain Measurements of Skull in Diagnosis of Basilar Impression. M. McGregor.—p. 171.

Accuracy in Radon Work. H. C. Webster.—p. 186.

Presentation and Analysis of Results of Radiotherapy. J. W. Boag.—p. 189.

British Medical Journal, London

1:771-818 (April 24) 1948

Folic Acid. J. F. Wilkinson.—p. 771.

Acute Intussusception in Childhood. B. Morrison and D. Court.—p. 776.

Unusual Case of Adrenal Carcinoma with Note on Application of New Color Test. L. R. Broster and Jocelyn Patterson.—p. 781.

*Adrenal Feminism Due to Carcinoma of Adrenal Cortex: Case Report and Review of Literature. C. N. Armstrong and J. Simpson.—p. 782.

Idiosyncrasy to d-Tubocurarine Chloride. T. C. Gray and J. Halton.—p. 784.

Feminism Due to Carcinoma of Adrenal Cortex.—Armstrong and Simpson review 8 previously reported cases of feminism due to carcinoma of the adrenal cortex and describe a case of their own in a policeman aged 40. In this case laparotomy disclosed a large adherent and necrotic tumor above the left kidney. Because of the vascularity of the tumor mass, its size and extensive adhesions, no attempt was made to remove it. Subsequently the patient deteriorated rapidly; he became emaciated, jaundiced and ascitic, and his liver became enlarged and nodular. Death occurred some eleven months from the onset of his symptoms. There was terminal hematuria. Acquired feminism due to carcinoma of the adrenal cortex causes a well defined syndrome of gynecomastia, abdominal tumor, atrophy of the external genitalia and loss of libido and

potency. The condition is rapidly fatal, especially in younger patients. Biochemically there are a moderate excess of urinary androgens and a gross excess of estrogens. A most striking feature is the invariable presence of a palpable abdominal tumor. The possibility that feminism might be due to hyperplasia of the adrenal cortex has been suggested by Broster and Vines, who have clearly shown that virilism can be due to hyperplasia of the adrenal cortex as well as to carcinoma or adenoma. They consider, that, similarly, feminism may be due to hyperplasia of the adrenal cortex.

Journal Obst. & Gynaec. of Brit. Empire, Manchester
55:125-260 (April) 1948

Relief of Severe Stress Incontinence: Technique and Anatomy of Two Suprapubic Fascial Operations. C. McIntosh Marshall.—p. 126.

*Virilizing Tumors of Ovary with Report of Case Associated with Pregnancy. W. N. Searle, M. Haines and J. K. Baker.—p. 135.

Calcium and Phosphorus Metabolism in Pregnancy: Survey Under War and Post-War Conditions. V. Calcium and Phosphorus Balances and Labor Findings. E. Obermer.—p. 142.

Hemoglobin Values in Pregnant Women. A. Sadovsky, W. Koch, R. Toaff and D. Kaplan.—p. 152.

Fibromyoma of Fallopian Tube. J. A. Chalmers.—p. 155.

Investigations Into the Determination of Pregnenediol According to Guterman Method. S. Kullander.—p. 159.

Facts and Fantasy in Study of Female Infertility. J. Stallworthy.—p. 171.

Heart Disease in Pregnancy. D. J. MacRae.—p. 184.

Virilizing Tumors of the Ovary.—Searle and his associates report the case of a woman, aged 33, who showed signs of virilism during pregnancy, particularly change in voice and hirsuties. These changes had become especially noticeable after twenty-four weeks of gestation. The patient delivered a normal child. Some weeks after delivery, the abdomen was opened and a cystic mass was found lying anteriorly to the right broad ligament. A long pedicle had evidently allowed considerable "wandering," and the cyst had finally "jumped" the broad ligament. The cyst was excised. The authors believe that this is the only reported case of an adrenal-like ovarian tumor appearing and causing virilism during pregnancy. Most of the signs of virilism have retrogressed notably since the removal of the tumor. The change in voice, however, remains more or less unaltered. This results from irreversible structural changes in the vocal cords. The ovarian tumor falls into the adrenal-like group. There is no evidence to assess it as a true arrhenoblastoma.

Journal of Physiology, Cambridge

107:129-244 (March) 1948. Partial Index

Distribution of Reducing Substances Between Intra-Ocular Fluids and Blood Plasma, and Kinetics of Penetration of Various Sugars Into These Fluids. H. Dawson and W. S. Duke-Elder.—p. 141.

Phosphate Clearances in Infants and Adults. R. F. A. Dean and R. A. McCance.—p. 182.

Directional and Spectral Sensitivities of Retinal Rods to Adapting Fields of Different Wave-Lengths. F. Flamant and W. S. Stiles.—p. 187.

Sulfanilamide Inhibition of Carbonic Anhydrase in Whole Blood. D. J. Anderson and L. C. Thompson.—p. 203.

Secretion of Adrenaline from Perfused Suprarenal Gland. Edith Bülbring, J. H. Burn and F. J. De Elío.—p. 222.

Effect of Ulnar Nerve Block on Blood Flow in Reflexly Vasodilated Digit. W. M. Arnott and J. M. Macfie.—p. 233.

Ascorbic Acid in Adrenal Blood. Marthe Vogt.—p. 239.

Journal of Tropical Medicine and Hygiene, London

51:45-66 (March) 1948

Studies in Tropical Ulcer: I. Origin of Epidemic. K. Hare.—p. 47.

Further Observations on Macroscopic Diagnosis of Urinary Schistosomiasis. C. V. Meeser, W. F. Ross and D. M. Blair.—p. 54.

Isolation of Cholera Vibrio. M. A. Gohar.—p. 59.

Practitioner, London

160:339-418 (May) 1948. Partial Index

Atopic and Allergic Disturbances of Skin. R. M. B. Mackenna.—p. 339.

Urticaria: Detection of Ingested Allergens: The Single Food Additive Diet. B. H. Winston and R. L. Sutton.—p. 347.

Some Common Industrial Diseases of Skin. P. B. Mumford.—p. 353.

Fungus Infections of Hands and Feet. P. D. C. Kimmont.—p. 359.

Present Status of Sex Hormones in Dermatology. D. I. Williams.—p. 367.

Cosmetics and Care of Skin. G. Hodgson.—p. 373.

Present Indications for Sulfonamides in Venereal Diseases. R. R. Wilcox.—p. 380.

Hospital, Rio de Janeiro**33:505-660 (April) 1948. Partial Index**

- *Myocardial Lesions in Hyperthyroidism. U. Lemos Torres.—p. 525.
*New Treatment of Barbituric Coma. A. Louzada.—p. 611.

Myocardial Lesions in Hyperthyroidism.—Lemos Torres found, at necropsy on 3 patients who died from congestive cardiac insufficiency and toxic crisis after thyroidectomy for toxic goiter, a serous inflammation of the myocardium in the first patient, which progressed to a fibrosis in the second patient and later to fibroblastic myocarditis, as seen in the third patient. Progressive serous inflammation and the consequent fibroblastic myocarditis are typical of hyperthyroidism.

New Treatment of Barbituric Coma.—Louzada regards picrotoxin as the treatment of choice of barbituric coma. Good results in 2 grave cases are reported from intravenous administration of the drug. The treatment was begun ten hours after ingestion of 46 tablets of 0.1 mg. of "seconal sodium" each. Picrotoxin was given in doses of 21 mg. during the first five minutes, 45 mg. ten minutes later and 30 mg. every hour for eight consecutive hours, followed by three more injections, in doses of 15 mg. each, every three hours up to a total amount of 585 mg. for the whole treatment, which lasted thirty-five hours. The patient should be given intravenous injections of dextrose solution or of sodium chloride solution and of 15 cc. of nikethamide, 10 mg. of adrenal cortex extract, 100 cc. of sodium bicarbonate solution and inhalations of oxygen.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam**92:825-896 (March 20) 1948. Partial Index**

- !Tuberculosis After Treatment with Streptomycin. M. Straub and H. E. Schornagel.—p. 832.
Course of Tuberculous Meningitis Under Influence of Streptomycin. A. Verjaal.—p. 841.

Tuberculosis After Treatment with Streptomycin.—Straub and Schornagel describe manifestations of recovery in 4 patients with tuberculous meningitis who were treated with streptomycin, but who died in spite of the treatment. Streptomycin apparently can cure the acute exudative dissemination of tuberculosis before this has assumed the specific histologic character. This is proved by the leptomenigeal changes, the tuberculous primary focus and the acute miliary tubercle. Streptomycin has no distinct influence on productive tuberculous changes, not even on subacute miliary dissemination. These, however, are kept in check by the body itself. Streptomycin, by curing acute exacerbations, gives a chance to the natural defensive power of the body to overcome the disease.

Nordisk Medicin, Stockholm**37:397-458 (Feb. 27) 1948. Partial Index**

- Hemorrhages During and After Placental Stage of Labor, Their Frequency nad Prevention. H. Sauramo.—p. 399.
Interstitial Pregnancy. N. Clemetsen.—p. 403.
*Some Virus Diseases During Pregnancy and Their Effect on Fetus. H. Grönvall and P. Selander.—p. 409.
*Rubella During Pregnancy and Congenital Defects in Child. M. Zewi.—p. 416.
Full Term Pregnancy with Syncopal Attacks in Dorsal Position. N. Clemetsen.—p. 422.

Virus Diseases and Their Effect on Fetus.—Grönvall and Selander's investigations show that maternal German measles, mumps, acute hepatitis and acute anterior poliomyelitis can be fraught with danger for the fetus. German measles in pregnancy has been less dangerous for the fetus in Sweden than in Australia.

Rubella During Pregnancy and Congenital Defects in Child.—In Zewi's 2 cases from Finland in infants whose mothers had German measles in the first and second months of pregnancy, respectively, there were bilateral congenital cataracts, with microphthalmia in one; in the other, bilateral congenital hydrophthalmus; in both, congenital heart defect. The weight at birth was low; the infants had difficulty in taking nourishment, and their physical and mental development was retarded.

37:459-514 (March 5) 1948. Partial Index

- *Penicillin Treatment in Acute Osteomyelitis: Primary Results. E. Eliassen.—p. 466.
*Late Results After Sulfonamide Treatment in Purulent Meningitis. M. F. Hauge.—p. 469.
Thrombocytopenia After Quinidine Medication: Tetany and Myocardial Injury. J. Burstein and B. A. Lamberg.—p. 473.
*Curare in Treatment of Poliomyelitis. N. Normann.—p. 476.
Prostigmine in Acute Porphyria. R. Gordin.—p. 480.
Circulatory Disturbances After Gynergen Treatment. A. Hjertaas.—p. 481.

Penicillin Treatment in Acute Osteomyelitis.—Eliassen gives single massive doses of penicillin (100,000 to 200,000 units) twice a day till the acute stage is past and the patient is afebrile. Roentgenologic examinations afford guidance for the continued treatment. The treatment should be started as early as possible, even on suspected diagnosis of acute osteomyelitis. The essential factor in treatment of this disease with penicillin is believed to be sufficiently long duration of the treatment. In 7 of the 8 cases in which treatment was given during the last year the process seems to have been completely arrested and reparation to be in progress; in 1 case extensive sequestration and fistula formation occurred.

Late Results After Sulfonamide Treatment in Purulent Meningitis.—Of 108 patients with the disease treated with sulfonamide drugs by the mouth and/or with parenteral injection, 27 died. On follow-up of the surviving 81 patients from one half to eight years after discharge, Hauge found permanent organic defects in 10 and permanent psychoneurasthenic defects in 28; of the 66 patients with meningococcal meningitis 7 had permanent organic defects and 16 permanent psychoneurasthenic defects. Sulfonamide treatment of purulent meningitis has not reduced the percentage of permanent and grave defects or milder and transient defects parallel with the mortality, and the late prognosis must be viewed with reservation. It is probable that the more promptly the treatment is started the greater the chance of avoiding defects.

Curare Treatment of Poliomyelitis.—Normann says that curare, tried in 12 cases of poliomyelitis in the acute stage and in 6 in a later stage, was of no definite value in the acute phase but gave good results in 3 of the 4 cases with beginning contractures. Side effects in some instances indicated termination of the treatment. The dosage should be individualized because of the danger of overdosage, as in cases with involvement of the respiratory tract. No conclusion could be drawn as to the efficacy of curare in combination with more radical physical therapy.

37:515-566 (March 12) 1948

- Genesis of Renal Hypertension. E. Braun-Ménendez.—p. 515.
Influence of Diet on Renal Function Measured by Inulin and Diodrast Clearance. H. O. Bang and A. Levin Nielsen.—p. 518.
*Treatment of Vesical Tumors. J. P. Strömbeck.—p. 520.
Venereal Disease Among Norwegian Soldiers. A. Strøm and K. Grette.—p. 522.
Asthma in Norway. Statistics on Occurrence and Significance. O. Clausen.—p. 525.
Rash in Mumps. Report from Practice. A. Perdrup.—p. 530.

Treatment of Vesical Tumors.—On the basis of 183 patients treated from 1940 to 1947, one third of whom had benign papillomas, one third malignant papillomas and one third cancer without early papillomatous stage, Strömbeck proposes the following plan: (1) in papillomas of benign type, if small and solitary, transurethral electrocoagulation; if larger and solitary, open electroexcision, possibly with implantation of radium needles, and in papillomatosis, extirpation of the bladder; (2) in papillomas of malignant type, if solitary, electroexcision with implantation of radium needles, and secondary extirpation of the bladder in recurrence; if larger and multiple, primary extirpation of the bladder; (3) in cancer, total extirpation of the bladder, and where this is contraindicated, resection or electroexcision with implantation of radium needles, with care not to make resection or excision too small because of reliance on the radium adjuvant; (4) possible preoperative and postoperative roentgen treatment, and (5) regular control of patients treated without cystectomy so that more effective methods can be employed early in case of possible recurrence.

Book Notices

Cancer: A Handbook for Dentists. Prepared by the Tumor Committee of the Connecticut State Dental Society. Cloth. Pp. 52, with 63 illustrations. Connecticut State Department of Health, Hartford, Conn., 1918.

Connecticut is among the best organized of all of the states in its approach to the problem of cancer. The attack on cancer must be total. Every one of the healing professions is concerned in the earliest possible detection of the symptoms of this disease. The handbook here reviewed is a product of a special committee and is circulated through the Connecticut State Department of Health and the Connecticut State Dental Association. It is magnificently illustrated with black and white and colored illustrations which portray graphically the conditions for which the dentist should be continually observant.

A Research in Marriage. By G. V. Hamilton, M.D. Cloth. Price, \$5. Pp. 571. Lear Publishers, 105 E. 15th St., New York 3, 1918.

This is a study on the sexual and a few other aspects of marriage based on a survey of one hundred couples. It is like the Kinsey Report in some ways but unlike it in others. The numbers are much smaller than those on which Kinsey reports. The investigation was based on cards of questions, each subject being examined separately in the private consulting room of the author. Questions were not asked orally, but were presented on the typed cards, of which forty-seven were used for each woman and forty-three for each man. The cards were passed to each subject and the answers were recorded together with notes on significant behavior reactions on the part of the subjects. The results are presented in tabular and narrative form. The author is guarded in his interpretation and conclusions.

The Practitioners' Card Index Guide to Treatment. Boxed. Devereaux (Medical) Publications Limited, 36-37 Maiden Lane, Strand, London, W. C. 2, [n. d.].

This is an attempt to present the new and practical methods of therapeutics in the form of an alphabetic card index. Techniques, dosage and methodology of treatment with the newer drugs are given in summary form, and many of the cards carry ready references to recent literature for more details. It is the stated intention of the authors to evolve a system that shall become increasingly comprehensive. For this purpose constructive criticism of subscribers has been requested. When fully developed, the card index guide should offer a useful and ready reference for the busy practitioner, particularly if it is kept up to date by frequent review of the newer developments in treatment.

No Retreat from Reason and Other Essays. By Alfred E. Cohn. Cloth. Price, \$3.50. Pp. 279. Harcourt, Brace & Co., 383 Madison Ave., New York 17, 1948.

Here are a variety of essays which the author has written over the years. Most interesting are his biographic studies of John Wyckoff and Simon Flexner. In these essays the author reveals himself as a philosopher with an intimate knowledge of art, music and letters. The essays are stimulating, in many instances lightened with wit and humor, and epigrams worthy of quotation. The essay called "On Retiring" is a somewhat cynical comment on an automatic retiring age, quoting great numbers of men who accomplished intellectual marvels beyond the age of 60.

Bases del control sobre la verruga. Por el Dr. Guillermo Gorblitz. Prólogo Dr. Sergio Bernales. Paper. Pp. 55, with 6 illustrations. Corporación peruana del santa, Servicio médico, Lima, Peru, 1947.

This comprises a survey of the epidemiologic problem of bartonellosis (verruca peruana) in Peru, including historical considerations, geographic distribution, vectors and factors important in its control. The importance and usefulness of D.D.T. (4,4'-dichlorodiphenyltrichloroethene) in the control of this disease so far is emphasized and the promise that this drug brings for future more complete control of the disease in Peru is discussed in detail. Several excellent plates, charts, and other illustrative material are included.

An Educational Philosophy for Exceptional Children. Proceedings of the Spring Conference on Education and the Exceptional Child of the Child Research Clinic of The Woods Schools, A Private School for Exceptional Children, Langhorne, Pa., May, 1947. Paper. Pp. 53. Child Research Clinic, The Woods Schools, Langhorne, Pa., 1947.

This brochure contains papers delivered in a symposium at the Woods School in May 1947. Similar conferences and institutes have been conducted at this institution on subjects dealing with the education of the exceptional child each spring and autumn since 1935. The introductory remarks are by Dr. George S. Stevenson, Medical Director, National Committee for Mental Hygiene. The following papers are included: "Theories of Culture and the Deviant," Morris Edward Opler, Ph.D.; "Education as a Factor in Personal Adjustment," Lawson G. Lowrey, M.D.; "Today's Changing Educational Scene," W. Carson Ryan, Ph.D.; "The Importance of Pattern Movements in the Rehabilitation of Cerebral Palsy Patients," Temple Fay, M.D.; "Communication as an Essential Area of Learning," Emmett Albert Betts, Ph.D., and "Modern Woman and the Harvard Report," O. Hobart Mower, Ph.D.

While each speaker dealt with the problem in relation to his own field, all were concerned with the role of education in aiding the individual to develop his potentialities fully. This booklet will be of interest to all physicians whose work touches on the educational and adjustment problems of the exceptional child.

The Biological Standardisation of the Vitamins. By Katharine H. Coward, D.Sc., Head of the Nutrition Department, Pharmaceutical Society of Great Britain, London. Second edition. Cloth. Price, \$5. Pp. 224, with illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

This book is devoted to a detailed description of the methods used for the biologic assay of certain vitamins. Assay procedures for vitamins A, B, C, D and E are given but because of the increasing use of microbiologic and chemical techniques, some of these now have only historical value or are useful only under special circumstances. Nearly one fourth of the book is devoted to a consideration of statistical methods applicable to the assays discussed in the first part. This discussion is probably the most valuable portion of the book. Nevertheless, this volume has limited usefulness but may be of interest to those engaged in routine bioassay work.

Physiologic Therapy in Respiratory Diseases. By Alvan L. Barach, M.D., Associate Professor of Clinical Medicine, Columbia College of Physicians and Surgeons, New York. Second edition. Fabrikoid. Price, \$9. Pp. 408, with 74 illustrations. J. B. Lippincott Co., 227-231 S. Sixth St., Philadelphia 5, 1948.

The first edition of this valuable book was written in 1944 and titled, "Principles and Practices of Inhalational Therapy." So much new knowledge has been contributed since the first edition was written that this second addition was needed. The subject matter is clearly presented and easy to read. The author correlates the pathologic physiology of each disease entity with the physiologic principles which underlie the treatment of the condition by inhalation therapy and other procedures which have value in the management of respiratory diseases. The book is recommended to any one who desires to know the indications and rationale of the physiologic therapy of the disorders of breathing.

Interesting and Useful Medical Statistics. Edited by William H. Kupper, M.D. Cloth. Price, \$6.50. Pp. 528. Wm. C. Brown Co., 915 Main St., Dubuque, Iowa, 1948.

This remarkable book consists of reprintings of hundreds of tabulations of numerical data from American medical publications since about 1935. The tables are arranged alphabetically according to subject, and an index facilitates the reader's search for information. The source of each table is stated, and is generally a readily available recent American publication. If prospective readers will remember that the book ignores all foreign literature and all publications before 1935, deals only with periodic literature, is unsystematic and uncritical, makes no mention of other similar works already published (such as the scholarly "Daten und Tabellen für Mediziner" by Vierordt) and expects the reader to look up the context of the tables for himself, this book can be extremely useful to writers and lecturers.

Old Age: Its Compensations and Rewards. By A. L. Vischer, Dr. Med. Foreword by Lord Amulree, M.D., F.R.C.P. Second edition. Cloth. Price, \$3.50. Pp. 200, with 9 illustrations. The Macmillan Co., 60 Fifth Ave., New York 11, 1947.

Since Dr. Vischer has been for more than twenty years director of the Municipal Home for the Aged in Basle, Switzerland, he can speak with real authority on the subject of old age. In this book he covers a great deal of ground.

Part I is devoted to a consideration of senescence as a bodily and mental process. Part II deals with the duration of life, under the headings "The Chronological and Physiological Stages of Life"; "The Centenarians"; "Old Age and Longevity in the Animal World"; "Prolongation of Life and Rejuvenation," and "Maladies of Old Age, and the Care of the Aged."

In Part III—"Society and the Individual; Their Attitude Toward Old Age"—Dr. Vischer discusses old age in other civilizations; the relation between the older and younger generations; the achievements of old age, and, finally, the personal attitude toward old age. This section, particularly the final chapter, is the best part of the book. Evidently Dr. Vischer is expressing his own philosophy when he outlines "the personal attitude toward old age," and he is to be congratulated on having achieved the frame of mind that would enable him to say: "old people who remain intellectually active often wear better physically. . . . The secret of the good life in old age lies in the possibility of bringing the mode of life and the chronological phase into harmony, like a well-broken pair of horses . . . with a correct attitude to youth the old man may even come to realize that intercourse with youth can only bring him profit. . . . The dread of overworking is very seldom justified. . . . We . . . want to prolong not only life, but also achievement."

Diseases of the Chest Described for Students and Practitioners. By Robert Coope, M.D., B.Sc., F.R.C.P., Hon. Physician, Royal Liverpool United Hospital (Liverpool Royal Infirmary). With a foreword by Lord Horder. Second edition. Cloth. Price, \$7.50. Pp. 541, with 168 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1948.

The chief revision in this the second edition of this book is in the bronchopulmonary anatomy, which has been brought to conform more closely to the modern American concept emphasizing the bronchopulmonary segments. The book is apparently written primarily for the medical student in the clinical years. Much space is devoted to physiology and to symptoms and physical signs with mechanisms of their production. The discussion of tuberculosis is very good except that streptomycin is not mentioned. The chapter on bronchial carcinoma is excellent, and the drawing illustrating the metastatic sites is especially illuminating. The discussion of fungous diseases is inadequate, and histoplasmosis is not even mentioned. There is a paucity of roentgenograms which is refreshingly at variance with the recent American tendency to make the literature on the chest top-heavy with them. The author endeavors "to set forth how diseases of the chest should be taught." He has produced a book which is excellent for the undergraduate and helpful to those in actual practice. The style is pleasing and, all things considered, the volume is well worth while to any one interested.

Recent Progress in Hormone Research: The Proceedings of the Laurentian Hormone Conference [1946]. Volume II. Edited by Gregory Pincus. Committee on Arrangements: R. W. Bates, R. D. H. Heard and G. Pincus. Cloth. Price, \$8. Pp. 427, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1948.

This is the second volume of what promises to be a valuable annual contribution to the literature on endocrinology. Following the pattern established by the first volume, the present book presents the papers and discussions given at the 1946 Laurentian Hormone Conference. The first two reports in the book present a stimulating discussion of the new physical-chemical assay methods for estrogenic hormones. At last it appears likely that quantitative chemical assays may replace laborious and costly biologic determinations of the estrogens, and that the various types of estrogens can be separated and quantitatively determined. The section on pituitary control and activity deals largely with pituitary-adrenal relationships, with the luteinizing hormone and with the hormonal control of

lactation. The last-named subject is particularly well presented by W. E. Petersen. Hormone metabolism receives attention in two papers, one by Roy Hertz and the other by Ralph I. Dorfman. Although the papers are confined to estrogens and androgens, considerable light is thrown on the metabolism of other steroids. Hormonal regulation of metabolism is discussed from the standpoint of insulin secretion, relation of thyroid activity to diabetes and the actions of the toxic thioureas. Finally, the clinical aspects of endocrinology are presented in reports dealing with sex hormone deficiencies, adrenal cortical tumors and the genetic and endocrine factors in the growth and development of childhood and adolescence. This volume will be of exceptional value to the steroid chemist and to the experimental and clinical endocrinologist.

The Care and Management of Laboratory Animals: Handbook of the Universities Federation for Animal Welfare. With an Appendix on Statistical Analysis. Edited by Alastair N. Worden, M.A., B.Sc., M.R.C. V. S., Milford Professor and Director of Research in Animal Health, University College of Wales, Aberystwyth. With a foreword by Professor T. Dalling, M.A., M.R.C.V.S., F.R.S.E., Director, Veterinary Laboratory, Ministry of Agriculture and Fisheries, Weybridge, Surrey. Cloth. Price, \$3.50. Pp. 368, with 70 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

In addition to presenting in meticulous detail all necessary information regarding proper care of laboratory animals, this volume contains a general chapter, by Major C. W. Hume, M.C., B. Sc., on law and practice in relation to the rights of these important partners in medical research. The discussion contains historical notes and a presentation of basic principles that should be required reading for every laboratory worker, from director to bottle washer. Carrying the subtitle, "Handbook of the Universities Federation for Animal Welfare," the book contains contributions from numerous reliable sources. There is some lack of orderliness in the approach of the various chapters as a result, but this is unimportant. All chapters include details on stock accommodation and equipment, feeding, handling and marking, breeding, anesthesia and species diseases and their control. Sixty-three illustrations, including diagrams and photographs of pens, cages and tanks, add to the practical value of the discussion. There are details on a wide variety of laboratory animals in common use, including the ferret, various rat and mouse species, the vole and the rather recently introduced golden hamster. A special chapter is devoted to pests of the animal house and their control, and another contains notes on care of anthropoids, dogs and cats, horses, shrews, vampire bats, poultry, reptiles and marine forms. In an appendix is presented a comprehensive survey of the elements of statistical analysis by Major Hume, with special sections on biologic assay and planning. The entire section is replete with formulas, charts and tables. The book should provide much aid for laboratory workers everywhere.

When You Marry. By Evelyn Mills Duvall, Secretary, National Council on Family Relations, and Reuben Hill, Associate Professor of Sociology, Iowa State College, Ames, Iowa. Cloth. Price, \$3. Pp. 450, with illustrations. Association Press, 347 Madison Ave., New York 17, 1948.

One of the authors of this book is secretary of the National Council on Family Relations; the other is associate professor of sociology in Iowa State College. The preface states that "this book has been written to supply the kind of guidance that is sought and needed 'when you marry.'" The foreword emphasizes the functional approach to teaching marriage and family living, and explains at some length how this is accomplished. The foreword is written by Ernest W. Burgess, of the University of Chicago.

The book is organized into four parts, dealing respectively with "Anticipating Marriage," "What It Means to Be Married," "The Making of a Family" and "Family Life Yesterday, Today, and Tomorrow." On the jacket it is claimed for the book that it covers the gamut of personal relationships from first date to last baby. In general it may be said that this claim is fulfilled.

In part I are chapters dealing with what the partners bring to the marriage with respect to heredity, personality development and other qualities. The second chapter essentially deals with the question: "How do you know it's love?" Subsequent chapters deal with dating, courtship, the meaning of an engagement, who gets married and to whom, marriage

and the facts of life, and morality makes sense. With the aid of amusing cartoons and an informal style, these chapters make easy reading, and they present a sensible philosophy which is neither too radical nor so conservative that youthful readers will be repelled.

In part II are chapters for the information of those just married, including suggestions about the honeymoon and settling down, establishing housekeeping and the major accomplishments of the first year of marriage. Another chapter deals with common conflicts in marriage and some rather surprising but definitely sensible thoughts about productive versus destructive quarreling. Marriage counseling is advocated as a help in many instances. There is a good chapter on money in relation to marriage and one on crises in the family relationships, including financial crises, desertion, infidelity and death. This is logically followed by a chapter on divorce which is unavoidably controversial. Those who adhere to the traditional opposition to divorce which is inherent in the belief of a number of religious groups will condemn the book on the basis of this chapter, which frankly has as its keynote the headline of one of its subsections, "Divorce Not Something to Fear or Condemn." On the other hand, this very attitude may recommend the book to persons of views divergent from those previously mentioned. Immediately following the chapter on divorce is one on what holds a marriage together. Part III has to do with the making of a family, with chapters on where babies come from, illustrated by photographs of the Dickinson models, another chapter on getting ready to be parents, one on what it means to be parents, and one on family life and religious living. This chapter will please or displease readers according to their religious views. Part IV has to do with the orientation of the family in relation to the past, the present and the future.

Subject to the differences of opinion inherent in philosophic and religious points of view, this book can be recommended for physicians to suggest to their patients.

The Baby's First Two Years. By Richard M. Smith, A.B., M.D., Sc.D. Fifth edition. Cloth. Price, \$2.75. Pp. 181, with illustrations. Houghton Mifflin Co., 2 Park St., Boston 7, 1948.

The material has been rewritten completely in many sections of this book to conform with recent knowledge concerning the care of infants. It has been an authoritative book for mothers for the past twenty years or more. The volume is divided into three parts. Part I, "The Care and Feeding of Infants," includes not only the usual chapters, but also one each on "Growth and Development," "Habits and Training" and "Sickness." Part 2, on "Suggestions to Mothers," contains a valuable chapter on "How to Travel with a Baby" and another on "A Typical Day," which summarizes and coordinates much of Part 1. Part 3 concerns itself with "Recipes and Charts." There are 181 pages of easily readable type, an index and 15 photographs $\frac{1}{2}$ to 1 page in size illustrating such things as putting on a diaper and equipment for the bath. This edition is written in an easily understandable, matter of fact style. There is perhaps not as much space given to psychologic phases and discussions as in some other recent "Baby Care" books. Dr. Smith takes a middle of the road attitude regarding daily schedules. He believes that the pendulum may have swung too far in both directions at various times.

I Love My Doctor. By Evelyn Barkins. Cloth. Price, \$3. Pp. 238, with illustrations by Alfred S. Plane. Thomas Y. Crowell Co., 432 Fourth Ave., New York 16, 1948.

This author loves her doctor, but she does not seem to love the medical profession or the practice of medicine. In the early chapters the doctor is still finishing his internship and the author studying for her degree in law. The story deals with the setting up of an office, the buying of a car, waiting for practice to appear and other events. One is not sure at first whether the primary purpose is to write an experience book on early marriage or one on starting a medical practice. While the author loves her own doctor, she seems to think most other doctors stupid. She jeers at medical meetings in general, tries to keep her husband off hospital staff appointments because she considers them political, and derides the scientific councils of the American Medical Association, of

which, incidentally she does not trouble to ascertain the correct names. Just why a doctor's wife should consider it funny to belittle the profession to which her husband belongs is not clear. The preceding book by this author has had a wide sale, and is said to have been hilariously funny. This one is not.

Surgical Applied Anatomy. By Sir Frederick Treves, Bart. Eleventh edition revised by Lambert Rogers, M.Sc., F.R.C.S., F.R.C.S.E., Professor of Surgery, University of Wales. Fabrikhold. Price, \$6. Pp. 560, with 192 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1947.

This little book, originally written sixty years ago, is probably the oldest textbook of surgical anatomy written in English to remain in current use. Despite its age and many revisions, it still fulfils Treves' conception of a "modern account of the application of anatomy to practice." It divides the body into six regions—head and neck, thorax, upper extremity, lower extremity, abdomen and pelvis, and spine and cord. Each is amply covered from the standpoint of general surgery as well as of the various surgical specialties. Many subjects, such as surgery of the blood vessels, which deals with ligations, abnormalities and collateral circulation, are omitted for the sake of brevity, "since these are fully treated in manuals of general anatomy." The work is easy to read. It is not abundantly illustrated, but the drawings present enhance the value of the text. The survival as well as the appeal of this book to the student, teacher and practitioner, particularly in England, is indicative of its usefulness.

Physical Treatment of Injuries of the Brain and Allied Nervous Disorders. By R. M. Hern, M.C.S.P., in Charge of Physiotherapy Dept., Military Hospital (Head Injuries), Oxford. With a foreword by Air Vice-Marshal Sir Charles P. Symonds, K.B.E., C.B., D.M. Cloth. Price, \$4. Pp. 96, with 34 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1947.

This short monograph presents in considerable detail a method of treatment of hemiplegia and other upper motor neuron disorders by means of active exercises. These include methods of teaching walking and rhythmic exercises for coordination with minimal apparatus. To develop functional ability of the upper extremities the most important equipment is three sizes of balls used in exercises and games. Other standard gymnasium equipment is also described and advocated. A few types of occupational therapy procedures are included. The complete problem of rehabilitation of these patients including social and economic adjustment is not fully covered. Physicians and technicians dealing with these problems will find practical information satisfactorily described and illustrated. It is recommended more as a reference textbook, as it does not completely cover the problems in this important field of physical rehabilitation.

Die Röntgendiagnostik der Wirbelsäule und ihre Grundlagen. Von Dr. med. Adolf Liechti, Professor für medizinische Radiologie, Direktor des Röntgeninstitutes der Universität Bern, Bern. Second edition revised by A. Eggli. Paper. Price, Dollar br. 13. Pp. 364, with 234 illustrations. Springer-Verlag OHG, Mölkerbastei 5, Vienna 1, 1948.

This book is written from the point of view of the radiologist. He describes the embryology of the vertebra and the disks, the various stresses and strains to which the back is subjected, and the physiology and static factors of the muscles of the back. He illustrates hemivertebra, butterfly vertebra, spina bifida, gorilla vertebrae and various anomalies and variations. Scheuermann's lesion, Calvé's lesion, and Cushing's lesion, arthritis of all types and infections, osteomyelitis and primary and secondary tumors are discussed. The bibliography, chiefly foreign, occupies 96 pages. This makes the book too heavy.

Control of Pain with Saddle Block and Higher Spinal Anesthesia. Edited by J. H. Walton, M.D., Cloth. Gratis to Physicians. Pp. 52, with illustrations by Frank H. Netter, M.D. Ciba Pharmaceutical Products, Inc., Summit, N. J., 1948.

This monograph describes the technics and gives other pertinent data on saddle block anesthesia (low spinal anesthesia limited more or less to anatomic parts that would be in contact with rider's saddle) and conventional spinal anesthesia for normal and operative obstetric deliveries. The only drug recommended is dibucaine hydrochloride. There are 12 excellent plates in color drawn by Frank H. Netter, M.D. The monograph will interest anesthetists and obstetricians.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

LOSS OF HAIR PIGMENTATION

To the Editor:—What could be the cause of the loss of pigmentation of the eyelashes and eyebrow of the right side over a period of three to four months. This patient is 4 to 5 years of age and somewhat overweight. Present weight is 58½ pounds (26.5 Kg.). What is the possible etiology and treatment in this case?

Darrel L. Evans, M.D., Manhattan, Kan.

ANSWER.—Premature whitening of the eyelashes and eyebrows, not due to locally applied bleaching agents, has been described in association with a number of diseases and injuries. Alopecia areata and vitiligo frequently accompany the disorder, and it has been described as occurring in trigeminal neuralgia, nerve injuries, peripheral neuritis, severe emotional trauma, iridocyclitis, interstitial keratitis, sympathetic ophthalmia, and following painful ocular surgical operations. Theoretically, the loss of pigment is ascribed to rapid penetration of the hair by air, to inhibition of pigment formation in the cortical cells of hair-bearing skin, to a circulatory change causing disturbances in distribution of pigment, to anaphylactic phenomena and to congenital factors.

No treatment is indicated; the affected hairs usually regain their pigment in a few months. Occasionally removal of the white cilia is followed by a growth of normally pigmented hairs. A good review and bibliography of the subject is contained in Hague (Uveitis; Dysacusia; Alopecia; Poliosis and Vitiligo. *Arch. Ophthalm.* 31:520, 1944).

TETRACHLORETHYLENE

To the Editor:—Please discuss the toxic effects of perchlorethylene on the liver as compared with carbon tetrachloride and trichlorethylene. What other chemicals does a "silk spotter" come in contact with that might cause damage to the liver? Would it be advisable for a "silk spotter" using perchlorethylene and having evidence of Laennec's cirrhosis of the liver to return to his occupation?

Lieut. (ig) W. H. Sprunt, MC, Batavia, N. Y.

ANSWER.—Perchlorethylene (tetrachlorethylene) along with trichlorethylene is much less toxic than carbon tetrachloride. In part this is due to lower vapor pressure and in part to the fact that perchlorethylene in the body decomposes to less active constituents while carbon tetrachloride likely remains intact and at least in exhaled air appears as such. Moreover, perchlorethylene damages the liver to a lesser extent than carbon tetrachloride. Its chief point of action may be on the cardiovascular-renal system and on occasion may be associated with pulmonary edema.

The "silk spotter" in a dry cleaning establishment is the "fancy spotter" doing work more complicated than the "rough spotter." Fancy spotting, in addition to silks, extends to divers synthetic fabrics. The silk spotter's table is likely to present a large array of chemicals calling for skill and experience. Some chemicals highly suited to silk will dissolve the synthetics. This trade is highly individualistic. Every spotter is likely to have a few personal secret concoctions that make him superior to the ordinary spotter. Almost anything may appear on his bench. The number will include carbon tetrachloride, perchlorethylene, chloroform, benzene, naphtha fractions, phenols and creosols, hydrofluoric acid, acetic acid, ammonia water, carbon disulfide, various alcohols, and such.

Spotter's benches are practically never ventilated. They should be. Since as little as a spoonful of carbon tetrachloride may provoke disaster it may be believed that this and other practical exposures readily come about. However, the real problem is not what chemicals appear on the spotting bench but instead how extensive the exposure therefrom and what protection is provided. "Spotters" like galvanizers are prone to alcoholism, there possibly being some "stimulation" from the chemicals employed. Any persons with Laennec's cirrhosis probably may be more easily involved in further hepatic damage than a wholly normal person. It would appear that the more salutary answer may derive from properly ventilated work booths rather than from removing the spotter involved in some degrees of hepatic damage. Alcoholism should be discouraged. Particularly alcohol accelerates the action of carbon tetrachloride.

BARBITURATES

To the Editor:—What are the relative merits of pentobarbital sodium ("nembutal") and "seconal sodium" as compared with phenobarbital and the specific indications for and dosages of each of these drugs?

S.S. Lasky, M.D., Brooklyn, N. Y.

ANSWER.—Pentobarbital sodium ("nembutal") and "seconal sodium" belong to the group of barbiturates usually classified as "short acting," whereas phenobarbital belongs to the "long acting" group.

Pentobarbital and "seconal" may be used as hypnotics to induce sleep in nervous or excitable patients. The rapid destruction in the body generally assures that the depressant effects will have disappeared at the end of a normal period of sleep (eight hours), and hence the so-called "barbiturate hangover" is usually absent. The hypnotic dose of pentobarbital and "seconal" is about 0.1 Gm. Both drugs may be used for pre-anesthetic sedation, the dose being 0.1 to 0.2 Gm.

Phenobarbital, because of the presence of the phenyl group has a prolonged action and is used wherever prolonged sedation is required. Hence it is not useful for the treatment of insomnia or as preanesthetic medication. Phenobarbital is chiefly used as a sedative and anticonvulsant in the treatment of epilepsy and has also been proposed as a sedative in circulatory and cardiac disorders. The average dose is 0.1 Gm.; the dose varies from 15 mg. to 0.2 Gm.

JIUJITSU

To the Editor:—Would jiu-jitsu not represent an ideal sport for self defense and physical training avoiding the dangers and brutalizing effects of boxing?

Leopold J. Schwarz, M.D., Wildwood, N. J.

ANSWER.—Various sources classify the technics of judo or jiu-jitsu into three divisions or "arts" including throwing (nage-waza), holding down (kataame-waza) and striking (ate-waza).

While judo or jiu-jitsu means "gentle way" or "gentle art"—first giving way so as to gain eventual victory, its striking, kicking and choking aspects hardly fit the definition.

Among the approved methods of scoring a point and winning a bout are: throwing the opponent flat on his back, holding the opponent down for thirty seconds, choking the opponent until he becomes unconscious or signifies defeat, causing the opponent to give up through the application of torture holds, hitting the opponent in a vulnerable spot.

During the last war, the immediate enemy in the Pacific happened to be the chief exponents of the activity. Interest in judo or jiu-jitsu in this country naturally became intensified. It is doubtful whether the activity would normally fit into the sport mores of what is now a rather well established American pattern. Further, as a peacetime pursuit, it is difficult to reconcile such activity with the social aims of a democracy.

In time of war, when the individual becomes more or less expendable, the situation is altered. With life or death sometimes dependent on skills of self defense, in hand to hand combat any means to the end becomes acceptable. The technics of judo, however, cannot be mastered in a short training period. Japanese experts spend years learning its intricacies, advancing through several ranks before qualifying for the higher ratings. In this connection it is interesting to note that toward the end of World War II many of our leaders became convinced that the best means of self defense for American youth were to be found in the familiar rough and tumble tactics growing out of American sports, coupled with those disarming and offensive skills that could be taught in a relatively short period of time.

ERYTHROBLASTOSIS

To the Editor:—What is the relation of apparently a cured erythroblastosis fetalis to the subsequent development of spasticity in the child? Please give sources for further information.

Robert E. Heerens, M.D., Batavia, Ill.

ANSWER.—The relation of erythroblastosis fetalis to cerebral damage is obscure, but it is quite clear statistically that there is an extreme high incidence of infantile jaundice and blood incompatibility among children suffering from mental deficiency, athetosis, spasticity and other cerebral defects of early infancy. The subject has been considered in several recent publications, among which are the following:

Yannet, H., and Lieberman, R.: Central Nervous System Complications Associated with Kernicterus, *J.A.M.A.* 130:333-340 Feb. 9, 1946, Neurological Defects and the Rh Factor, *Internat. Med. Digest.* 48:55-58 (Jan.) 1946.

TRICHOMONAS VAGINALIS

To the Editor:—What is the latest information on treatment of *Trichomonas vaginalis* infection? I have 2 patients that I have been unable to relieve. We have used all standard treatments and searched for all points of infection and sources of reinfection.

Sam B. McFarland, M.D., Lebanon, Tenn.

ANSWER.—In nearly all cases of *Trichomonas vaginalis* infection, relief can be given the patient promptly by many forms of treatment. However, while it is easy to produce a temporary cure it is often difficult to give permanent relief. In refractory cases and in cases in which recurrences are frequent, a diligent search for a source of reinfection must be sought in the cervix, Skene's glands, the bladder and urethra, Bartholin's glands, the rectum and the husband's prepuce and prostate. Of course, if the trichomonads are found in any one of these organs, an effort should be made to get rid of the organisms.

Ray E. Trussell in an excellent book, "*Trichomonas Vaginalis and Trichomoniasis*," (Springfield, Ill., Charles C Thomas, Publisher, 1947) pointed out that failure to cure vaginal trichomoniasis is suggestive of resistant forms, but he also suggested that (1) rectal, urethral and glandular involvement were overlooked; (2) treatment was inadequate or inappropriate; (3) reinfection occurred, or (4) a drug-resistant strain developed.

Trussell stated: "The final word in the therapy of *trichomonas vaginitis* is far from having been written. At present the most commonly employed agents included aldarsone, carbarsone, acetarsone, silver picrate, floroquin, lactobacilli, and vioform. There is a current trend to the use of acid creams and jellies with or without the addition of protozoacides other than the acids. Good results have been achieved with most of these in the hands of careful investigators."

In a series of cases in which 98 per cent of the patients were cured, the treatment consisted of drying the vaginal tract and then applying by insufflation 2 to 4 Gm. of a powder containing 20 per cent by weight of finely pulverized mild silver protein ("argyrol"), 40 per cent of kaolin and 40 per cent of beta-lactose.

The patient was instructed to take a nightly douche, containing white vinegar (4 tablespoonfuls to 2 quarts of warm water) followed by insertion high into the vagina of a no. 12 gelatin capsule containing an additional 4 Gm. of the mild silver protein, kaolin and lactose powder. One week's supply of capsules was given, and the patient was asked to return at the end of that time, having taken the only douche (omitting medication) on the night preceding examination.

Patients were instructed to give careful attention to feminine hygiene to prevent reinfection from any of the possible sources. Treatment was not interrupted during the menstrual period.

The number of weeks of treatment given, in the absence of recurrence, was between three and four, and in the presence of one or at most two recurrences, between five and seven.

ENCEPHALOPATHY

To the Editor:—Are there publications on: (a) early differential diagnosis by means of the prothrombin time of embolic, thrombotic or hemorrhagic encephalopathy; (b) therapy of thrombotic encephalopathy by means of anticoagulants such as heparin and "dicumarol"; (c) the relative merit of the anticoagulant method in thrombotic encephalopathy as compared to the method procainization of the ganglion stellatum as described recently by Geza de Takats in *The Journal* (136: 659 [March 6] 1948)?

Wladimir G. Eliasberg, M.D., New York.

ANSWER.—The first question is based on the assumption that the prothrombin level of the blood is a measure of the patient's clotting tendency. It is true that the hemorrhagic tendency of jaundice and the state of the blood after "dicumarol" therapy are accompanied by a diminished level of prothrombin in the blood. It has also been observed that increased prothrombin levels, a state of hyperprothrombinemia, can be found in persons shortly after operation or after childbirth. This however, is only true when prothrombin is measured in diluted plasma, and Quick has always criticized these methods as not determining true plasma-prothrombin levels and thus being artefacts.

But even if an increased prothrombin level were a consistent finding in recent intravascular clotting, a diagnosis between cerebral embolus, thrombosis or hemorrhage would not be possible, since all three of these vascular accidents raise the clotting tendency. Thrombosis increases the clotting tendency; embolus of course is a thrombus, broken loose, and hemorrhage is well known to shorten coagulation time; added to this is the state of dehydration in which most of these patients are found within a few hours, and this itself increases the tendency to clotting. The correspondent does not know of any published article which

tries to differentiate the three forms of cerebrovascular accident by determinations of prothrombin levels, but on the basis of our present knowledge useful findings cannot be expected.

Question (b) refers to the use of anticoagulants in cerebral thrombosis. This is practiced on some services throughout the country but requires the elimination of cerebral hemorrhage from the group under treatment; since anticoagulant therapy per se has been known to produce cerebral hemorrhage, caution is indicated; heparin had better not be employed, and "dicumarol" given in conjunction with 200 mg. of rutin a day to counteract capillary fragility which may develop with the use of "dicumarol." The prothrombin level should not be allowed to drop below 30 per cent of normal in this group of patients.

(c) The relative merits of the anticoagulant therapy as compared to the sympathetic block in cases of cerebral thrombosis have not been described. Judging from results obtained in vascular thrombosis of the extremities, both methods can be used simultaneously, since they complement each other and act by different mechanisms; anticoagulants prevent propagation of the thrombus, and sympathetic block relieves the stasis and edema around the cerebral infarct. To answer summarily the three questions of the inquiry: there are no publications available at present. Further information may be obtained by consulting the following authors:

Quick, A. J.: *The Hemorrhagic Diseases and the Physiology of Hemostasis*, Springfield, Ill., Charles C Thomas, Publisher, 1942.

Bramble, L. E., and Loher, E. F.: *Proc. Soc. Exper. Biol. & Med.* 53: 218, 1943.

de Takats, G.: *Heparin Tolerance: A Test of the Clotting Mechanism*, Surg., Gynec. & Obst. 77: 31 (July) 1943.

Hagedorn, A. B., and Barker, N. W.: *Coagulation Time of Blood Heparinized in Vitro: Correlation of Results with Those of the Heparin Tolerance Test*, J. Lab. & Clin. Med. 32: 1087 (Sept.) 1947.

MALE STERILITY

To the Editor:—What treatment is indicated for a man aged 30 years, otherwise in good health, who is sterile? A fresh specimen of semen shows a large number of well developed spermatozoa, except that they are all immotile.

Robert C. Tavlin, M.D., Mooreland, Okla.

To the Editor:—Is there a hormone that will reactivate spermatozoa that have been in a semidormant state for some time? The patient is 40 years old.

A. E. Goebel, M.D., Montrose, Ill.

ANSWER.—In freshly ejaculated semen the spermatozoa nearly always possess some degree of motility. When examination shows poor motility, or none, the reason is usually a technical fault in collecting or handling the specimen. Materials used in the manufacture of ordinary condoms may kill even the liveliest cells within half an hour. Heat at first stimulates the activity of the spermatozoa, with the end result that their inherent vitality is more quickly exhausted. Cold can immobilize them, thus producing apparent necrostermia though the cells are not necessarily dead.

When initial motility is subnormal or, as happens in rare cases, completely lacking, several possible causes must be considered. Poor spermatogenesis may yield cells so immature or morphologically imperfect that they are incapable of any activity. If the male duct system and its accessory glands do not function properly, spermatozoa may fail to "ripen" in the epididymides or to receive their normal physiologic stimulation from the prostatic secretions. Chronic infection or congestion of the prostate and vesicles may produce such viscosity of the seminal fluid that motility is mechanically impeded.

The first step in differential diagnosis should be the examination of a stained smear of semen with regard to the incidence of poor morphology. Faulty functioning of the epididymides and accessory glands may be indicated by small volume and increased viscosity of the ejaculate, and is further suggested if hormone assays show hypogonadism. Prostatovesiculitis can be diagnosed by the usual methods of studying the expressed secretions.

As a general basis for treatment the patient's health and hygiene receive all necessary attention. If his basal metabolic rate is below plus 10, it should be raised and maintained at that level by the carefully regulated administration of thyroid. More specific therapy will depend on the faults identified in his genital tract. Poor spermatogenesis may respond to gonadotropins, though the results in most cases are disappointing. Small doses of testosterone sometimes improve the functioning of the duct system and its glands; large doses are inadvisable, since they tend to depress the gonadotropic activity of the anterior pituitary. Chronic prostatovesiculitis should be treated by the accepted urologic techniques.

PITUITARY DEFICIENCY

To the Editor:—A white woman aged 30 has had her condition diagnosed by competent specialists as a pituitary deficiency. Her major complaints during the period of examination and treatment were facial hirsutism and an abnormally large distribution of fat in the legs, thighs and hips. She is soon to be married. What are the possibilities of her children inheriting this tendency?

M.D., Arkansas.

ANSWER.—It is impossible to make a diagnosis on the basis of the information provided; it might be impossible with all the information. If this woman 30 years of age is simply fat and hairy and if she has been menstruating, in all probability there is no reason to incriminate the pituitary gland. Most such girls and women respond satisfactorily to a weight-reduction program and local attention for the hirsutism. If this patient is really suffering from a pituitary deficiency, she probably could not become pregnant. In any event, there is no evidence that disturbances of the pituitary gland are hereditary. Every physician has observed obesity and hirsutism as parts of racial and family patterns.

HYPEROSMIA

To the Editor:—What is the best method of dulling the sense of smell? I have a maternity patient with an unusually keen sense of smell, which causes much nausea. If her olfactory organs could be impeded, she would improve.

Eugene Smith, M.D., Waterloo, Ia.

ANSWER.—Although it is a variable entity hyperosmia may be a symptom of hysteria or a psychosis. It may also be an indication of local functional disturbance in the olfactory lobe. The perception of odors is occasionally exaggerated during the early stages of pregnancy. Since nasal pathologic conditions seldom cause hyperosmia, attempts to dull the sense of smell through local medicaments would be inadvisable. During pregnancy psychogenic factors are likely to be strong. Reassuring the patient that she is normal and that the sense of smell will improve are of prime importance. She may be advised to carry on her person a bottle of agreeable perfume to counteract disagreeable odors.

DIABETES INSIPIDUS

To the Editor:—Please give information on use of posterior pituitary extract orally to control the symptoms of diabetes insipidus. Is it as efficacious as when used parenterally?

LaMar J. Hankamp, M.D., Delton, Mich.

ANSWER.—Posterior lobe pituitary extract is not effective when given by mouth. It is most effective when given parenterally, and relief of symptoms of diabetes insipidus is obtained in most cases when posterior pituitary or, better still, the antidiuretic principle known as "pitressin" is given subcutaneously. For long-continued effect the intramuscular administration of "pitressin tannate in oil" is desirable.

Good absorption is obtained usually through the nasal mucosa. Many patients with diabetes insipidus respond excellently to the insufflation of posterior lobe pituitary powder, and this, incidentally, is the least expensive form of treatment. Somewhat less effective when applied to the nasal mucosa are ointments and solutions containing pituitary extract.

TRIETHYLENE GLYCOL

To the Editor:—Please furnish information regarding use of triethylene glycol as a preventive of colds and virus infections.

W.B. Inman, M.D., Sosa, Miss.

ANSWER.—The use of triethylene glycol as a preventive for colds and virus infections is still highly experimental. We lack satisfactory evidence that under the conditions of use which would be practicable in a home, office or factory any significant diminution in the incidence of viral infections can be obtained.

Triethylene glycol is manufactured by the Carbon and Carbide Chemicals Corporation and by the Dow Chemical Company.

LIPIODOL

To the Editor:—Is there a substitute for iodized oil ("lipiodol") with which to make bronchogram studies on a patient who has a marked sensitivity to iodine? If so, where can it be procured?

John W. Stacey, M.D., Tucson, Ariz.

ANSWER.—Unfortunately, there is no satisfactory substitute for iodized oil in bronchography. Experimentally, compounds containing bromine have been tried, but they are too irritating and fail to cast a satisfactory shadow.

COBRA VENOM

To the Editor:—What is the consensus relative to the use of "cobra venom" in intractable pain in cancer? A patient is using more narcotics with less relief. Prognosis is that she will live for another year or more.

G. N. Green, M.D., Elgin, Ill.

ANSWER.—The pharmacology and the therapeutic value of preparations of cobra venom (*naja*) have been described in the following references.

The consensus is that cobra venom is useful in relieving severe chronic and prolonged pain, especially in advanced cases of cancer and also of neuritis from other cause. Toxicity of such preparations is not great, and the chief point to be kept in mind is that efficient dosage must be determined for each patient separately. The principal advantage of cobra venom therapy is that it is not depressing for the higher centers of the brain and that it can also be substituted gradually for the opium narcotics in cases of narcotic addiction.

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Macht, D. I., and Brooks, D. J.: *Am. J. Physiol.* 129: 310, 1940.
Fonle, W. B.: *M. Rec.* 153: 287-291, 1941.
Rottmann, A.: *Deutsche med. Wchnschr.* 66: 897-930, 1940.

LOW CHOLESTEROL DIETS

To the Editor:—What is the present opinion regarding low cholesterol diets in patients who have had coronary thrombosis? Please give references to the cholesterol value of foods.

M.D., Tennessee.

ANSWER.—The value of low cholesterol diets in coronary thrombosis is not clearly established. In some instances such a diet reduces an abnormally high serum cholesterol to a normal level; in others it has little or no effect. Factors other than the cholesterol content of the diet may be important in maintaining a high serum cholesterol level; namely, the level of metabolism, the state of hepatic function and the type of food which the body converts into cholesterol. Little is known about what "precursors" are important in human nutrition.

A complete table of cholesterol value of foods is given by Okey, R.: *Cholesterol Content of Foods, J. Am. Diet. A.* 21: 341 (June) 1945.

PENICILLIN IN OIL IN PEDIATRICS

To the Editor:—Is the adult dose of 300,000 units of penicillin in oil harmful to an infant or young child?

L. Gruenewald, M.D., Sheboygan, Wis.

ANSWER.—The dosage of 300,000 units of penicillin in oil will not cause any damage to an infant or a young child.

DIPHTHERIA VIRULENCE

To the Editor:—In *The Journal* on page 955 of the issue of April 3, 1948, I note an affirmative answer to an inquiry concerning the virulence of diphtheria bacilli, "Can the same organism found to be nontoxic by guinea pig inoculation on one occasion be capable of changing its virulence after repeated cultures or after repeated animal or human passage?"

So far as I know there is no sound basis for this answer. All evidence is to the contrary, i.e., that diphtheria bacilli whether toxigenic or nontoxigenic remain unchanged in regard to these properties. Possibly the only suggestive results were obtained by Roux, who thought that he had altered the virulence of diphtheria bacilli, but his controls were not clear and no other conclusive experiment on these lines has ever confirmed him. One or two reports of alterations in virulence of toxigenic diphtheria bacilli include alteration in morphology and fermentative characters so that the organism of changed virulence is no longer recognizable as a diphtheria bacillus and may actually represent contamination.

Martin Frohisher Jr., Sc.D., Baltimore.

CONGENITAL CATARACTS

To the Editor:—I read with some interest your reply to "M.D." questioning the treatment of congenital cataracts (*The Journal*, volume 136, page 809).

Perhaps in the broader sense your reply is quite correct. It is, however, important that the child in question should develop fixation. The macula, as is well known, is not developed at birth, and subsequent growth appears dependent on the stimulus of surrounding objects. This, of course, is not likely when congenital cataracts exist—provided they are total. The prognosis when fixation nystagmus has developed is not good.

Nor would I be too optimistic about the late prognosis in the patients. They appear notoriously susceptible to major complications following intraocular surgery. Detachment of the retina and late secondary glaucoma are common causes for loss of vision in early adult life.

Dr. Arnold Knapp (*Arch. Ophth.* 32: 403-406 [Nov.] 1944) discussed this matter thoroughly some years ago.

Alfred A. Stonehill, M.D., New York.

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RHEUMATOID ARTHRITIS

The Importance of a Comprehensive Approach in Treatment

Chairman's Address

WALTER BAUER
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The cause of rheumatoid arthritis remains unknown. Although many theories have been proposed, no one of them has been generally accepted. To date, there is no method of treatment for rheumatoid arthritis which can be considered "specific"—a term which implies rapid and complete reversal of subjective and objective manifestations of the disease, whether localized to the skeletal system or other parts of the body. Until this long-awaited discovery is at hand, the treatment of rheumatoid arthritis is necessarily confined to those measures believed to be beneficial but not necessarily of proved value. It is the purpose of this report to review briefly the nature of the disease, to outline the minimal requirements for the assessment of newer methods of treatment and to stress the importance of a comprehensive approach in the treatment of patients with this disease.

NATURE OF THE DISEASE

Rheumatoid arthritis presents a variety of clinical forms and pursues no single pattern of development. It must be regarded as a distinct disease entity that can readily be recognized. Space does not permit more than a listing of the outstanding features that distinguish rheumatoid arthritis from other forms of joint disease. It is essential to realize that one is dealing with a generalized disease with well marked constitutional manifestations that are not merely secondary to the articular lesions. Female subjects are more commonly affected than male, except in cases in which the spine is involved. The onset is not limited to any age group and may occur from infancy to senility. The constitutional symptoms often precede the appearance of objective joint signs, and it is thus possible to surmise the diagnosis in what may be termed a prodromal stage. Precipitating factors, such as physical or emotional strain, infection and accidental or operative trauma, often appear to play a role both in the initiation of the prodromal symptoms and in the production of articular manifestations of the disease. The type of onset ranges from the insidious to the explosive, with endless variations between. In many

patients the initial complaints are fatigue, exhaustion, lassitude, loss of weight and symptoms referable to the nervous system and the vasomotor apparatus. In cases of severe disease these symptoms may be profound. Both large and small joints are affected, at first perhaps in a migratory fashion but later with unrelenting persistence. Examination of the joints reveals no early observations that are specifically different from those of other forms of arthritis. The signs of inflammation, usually mild and often accompanied with effusion, almost always precede the development of limitation of motion and deformity. More important is the symmetric polyarticular distribution of the arthritis, although involvement of one or a few joints is not uncommon in the early stages. Muscular weakness and atrophy are prominent, and inflammation of muscles and extra-articular fibrous tissue is almost invariably present. Subcutaneous nodules form a characteristic part of the clinical picture in about 20 per cent of the cases. Involvement of other organs of the body is evidenced in certain cases by cold, clammy hands and feet, atrophy and pigmentation of the skin, lymphadenopathy and splenomegaly, pericarditis and pleuritis and ocular changes including iritis, uveitis, scleritis and scleromalacia perforans. The course of the disease is all too often one of steady or intermittent progression, although complete or nearly complete remissions are not unusual at first, and certain patients recover without significant residual disability.

The laboratory studies, although not of diagnostic help, may aid in the determination of the severity of the disease. The sedimentation rate of the red cells and the Schilling or filament-nonfilament count are useful in following the course of the disease, but only occasionally in differential diagnosis. In approximately 50 per cent of the cases, the serum of patients with rheumatoid arthritis agglutinates strains of hemolytic streptococci of Lancefield group A in a characteristic manner. In such cases, a positive reaction to a test is of value in distinguishing rheumatoid arthritis from other forms of arthritis in which agglutinations are encountered only rarely. Unfortunately, the reaction to the test is rarely positive in patients having the disease less than one year. The antistreptolysin and antifibrinolysin titers in rheumatoid-arthritis serums are not characteristic, whereas rheumatic fever serums usually show elevated values. Biopsy of subcutaneous nodules is frequently of aid in differentiating the former disease from the latter. Examination of synovial fluid is helpful in ruling out traumatic arthritis, degenerative joint disease and the specific infectious arthritides. Hypochromic anemia is also observed in cases of severe disease. The white blood cell count varies considerably. In most cases, it is within normal limits or only slightly elevated. In the acute and active stages, counts of 12,000 to 20,000, occasionally higher,

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may be observed, whereas in cases of long-standing chronic disease definite leukopenia may develop. Roentgenograms in joint disease must always be interpreted in the light of the duration, severity and articular distribution. With the aid of such facts, accurate roentgenologic diagnosis of rheumatoid arthritis is usually possible. The characteristic features include soft tissue swelling, effusion, systemic decalcification of bones, loss of bony substance in "punched-out" areas, narrowing or even obliteration of the joint space, marginal erosion and, finally, subluxation and gross bony destruction. No single feature mentioned constitutes a diagnostic criterion, and it has been truly said that the picture differs from that of specific infectious arthritis largely in speed of progression.

Postmortem examinations confirm the systemic nature of rheumatoid arthritis, inflammatory lesions being demonstrable in the skin, subcutaneous tissue, muscles, peripheral nerves, eyes and serous membranes, as well as the articular tissues. Such widespread involvement of nonarticular systems serves to stress the importance of a comprehensive approach in the treatment of patients with this disease.

ASSESSMENT OF NEWER METHODS OF TREATMENT

Patients with chronic diseases of unknown cause are frequently subjected to various therapeutic procedures that are of questionable merit and are usually based on conjecture. Such supposedly curative and ameliorative measures are regularly administered to patients with chronic rheumatoid arthritis, often at considerable expense, not infrequently with resulting complications, occasionally even death, and generally without material benefit to the patient. This state of affairs is due in part to the fact that patients with chronic diseases often demand treatment. They are ever hopeful that each new form of treatment prescribed will be as specifically curative as the advertisements claim. There are, however, other causes for the continued prescribing of many useless antirheumatic remedies. The premature publication of poorly controlled studies acclaiming great therapeutic benefits and voluminous medical advertising constantly confront the busy practitioner of medicine. He has neither the time nor the facilities to investigate adequately the claims made. Except for the reports of the Council on Pharmacy and Chemistry of the American Medical Association, its "Queries and Minor Notes" columns and the all too infrequent publications concerning the repudiation of previously published premature claims, the busy physician has no way to determine the respective merits of these therapeutic procedures.

In a chronic disease of unknown cause, such as rheumatoid arthritis, characterized by unpredictable spontaneous remissions and exacerbations, it is extremely difficult to evaluate the results of treatment with any degree of certainty unless the studies are rigidly controlled. Because of the decided variations in the course of the disease from case to case, each patient must be made to serve as his own control. If studies pertaining to the evaluation of therapeutic procedures are not conducted in this manner, one is likely to conclude that the improvement observed is the result of treatment, whereas it may actually represent the natural variation in the course of the disease. Such a controlled study can be made only by choosing patients whose clinical course and variations in sedimentation rate have been known for months or years prior to the institution of a new form of treatment. An adequate follow-up period is most essential, so that one

can decide as to the permanency of any improvement noted during the period of treatment. In addition to these precautions, it is extremely important that the patient be kept on the same basic regimen before, during and after the administration of the treatment being evaluated. Every available means should be employed in evaluating clinical improvement. One should record separately the subjective, objective and laboratory evidence of improvement, the final results being based on all three. In addition, one must judge the total severity of the disease. This is done by taking into consideration the degree of constitutional symptoms and signs, the speed of progression of the disease, the amount of disability, the extent of the involvement and the activity of the process. This method of recording enables one to establish more accurately what, if any, psychic effect must be taken into account in the final summation. In all fairness to the type of treatment being studied, only patients whose disease state is active and still reversible should be selected. That the activity of the disease process is reversible is shown both by spontaneous remissions and by those encountered in pregnancy and intercurrent jaundice. One must also realize that in the early and atypical cases there are more likely to be remissions than in the more typical cases which have been more or less stationary for a long time. If the administration of a given form of treatment should result regularly in improvement in this latter group, one might have reason to suspect that one is dealing with a specific form of treatment.

The early enthusiasm for each procedure is sooner or later dampened by the publication of critical well controlled studies, of the type outlined, with essentially negative results.¹ The exception is gold therapy, introduced nearly twenty years ago, although its acclaimed specificity has occasionally been challenged in recent years. Studying the efficacy of gold therapy in the manner described reveals that it cannot be regarded as a specific and constantly effective treatment for rheumatoid arthritis.² It is more difficult to state whether gold is of some benefit to the patient with rheumatoid arthritis and whether its use is therefore justified in a patient failing to respond to conservative measures. Two control studies apparently demonstrate an additive therapeutic effect on the part of gold during relatively brief periods of observation.³ Otherwise, the results obtained with gold may be approximated with those in patients given general conservative treatment. A careful follow-up study of patients improving during gold therapy reveals a high percentage of relapses, so that the net gain is slight. There is even an indication that the natural fluctuant course of the disease is largely responsible for the results reported in such cases. The burden of proof is still on the proponents of gold therapy to demonstrate by adequately controlled studies with a follow-up of three to five years that a significant effect is exerted on the course of rheumatoid arthritis by the administration of gold salts.

Gold therapy, like certain other antirheumatic drugs, is not without danger. The toxic manifestations are

1. Abrams, N. R., and Bauer, W.: Treatment of Rheumatoid Arthritis with Large Doses of Vitamin D: Critical Evaluation, *J. A. M. A.* **111**: 1632-1639 (Oct. 29) 1938. Freyberg, R. H.; Block, W. D., and Fromer, M. S.: Study of Sulfur Metabolism and Effect of Sulfur Administration in Chronic Arthritis, *J. Clin. Investigation* **19**: 423-435, 1940. Sidel, N., and Abrams, N. I.: Treatment of Chronic Arthritis: Results of Vaccine Therapy with Saline Injections Used as Controls, *J. A. M. A.* **114**: 1740-1742 (May 4) 1940.

2. Short, C. L.; Beckman, W. W., and Bauer, W.: Gold Therapy in Rheumatoid Arthritis, *New England J. Med.* **235**: 362-368, 1946.

3. Fraser, T. N.: Gold Treatment in Rheumatoid Arthritis, *Ann. Rheumat. Dis.* **4**: 71-75, 1945. Sashin, E.; Stanbeck, J., and Kline, D. H.: Gold Therapy in Rheumatoid Arthritis, *J. Bone & Joint Surg.* **21**: 723-734, 1939.

unpredictable, unpreventable and, at times, irremediable. If the specificity of gold were established, this risk would be justifiable in a disease that bears the implications of lasting invalidism. With the case as yet unproved for its place as a palliative or adjuvant remedy in rheumatoid arthritis, the hazard of this form of treatment should furnish the decisive argument against its general use.

Dependence on any one therapeutic agent in the treatment of rheumatoid arthritis, unless it has a degree of specificity comparable to that of the sulfonamide drugs and penicillin in lobar pneumonia, deprives the patient of the benefit of constitutional treatment, physical therapy, orthopedic measures and other indicated therapeutic procedures.

IMPORTANCE OF A COMPREHENSIVE APPROACH

It is obviously impossible to select a true control series of untreated patients with rheumatoid arthritis. Nearly every patient with the disease in a recognizable form has received some form of treatment whether advised by his physician or someone else. Therefore, the advocates of a conservative therapeutic regimen, consisting largely of bed rest, psychotherapy, adequate analgesia, exercises to improve or maintain muscle and joint function, application of heat to actively involved joints, proper support for joints to allow reduction of muscle spasm and pain, the prevention and correction of deformities and an adequate diet, with supplementary vitamins when indicated and iron and transfusions when necessary,⁴ cannot prove that it alters the natural course of rheumatoid arthritis. Two hundred and fifty unselected patients with the disease who received this type of treatment were observed for an average period of ten years.⁵ Of this series, 23, or 9.2 per cent, were reported as five-year "cures" ("remissions" or "arrests")—a slightly higher figure than the 6.3 per cent recently reported for 142 patients given gold therapy.⁶

The systemic nature of the disease indicates that measures to increase the patient's resistance and place him in the best general health, in addition to proper handling of the inflamed articulations to promote healing and to preserve function, are in order. This is no easy task. It requires a full appreciation of the nature of the disease, the personality of the person afflicted and the importance of detailed management, as well as an abundance of patience, equanimity, ingenuity and resourcefulness on the part of the physician. Failure to approach the problem in this manner is frequently the cause of considerable frustration on the part of the physician treating patients with rheumatoid arthritis. If this reaction is not recognized, it may unconsciously impel the physician to resort to an endless number of therapeutic agents until such time as the patient wanders off to another physician, the use of patent remedies or quacks. Resort to methods of doubtful value may at times be necessary to hold the patient to the pursuit of a few simple measures of proved worth. In such instances, the physician should admit compromise with his intellectual honesty and admit that by doing so, he hopes to tide the patient over a discouraging period when the disease seems to be at a standstill or progressing in spite of all efforts. The possibility of a remission when things look darkest should never be

lost sight of. The startling freedom from symptoms gained from intercurrent hepatic jaundice or pregnancy points out that the process is not irreversible and that the long-awaited specific method of treatment may yet come to light.

Once the diagnosis has been made, the patient should know what is ahead of him and should be informed that there is no easy and rapid road toward arrest of the disease. He should also be made acquainted with the natural course of rheumatoid arthritis, so that he will not relax his precautions as a result of a remission or become overly depressed from an exacerbation.

The proper treatment of rheumatoid arthritis necessitates consideration of the patient as a human being. Attention must be given, not only to the many psychogenic factors that played a role in the precipitation and the progression of the arthritis, but also the various problems produced by the disease. There must be a realization that whatever emotional instability previously existed is increased by the illness. The effect of the financial load caused by the sickness and of the disruption of activity and of plans must be handled. At all times an attempt must be made to understand what the patient thinks about the disease, to be aware of and lessen his fear of it and to increase his insight into the effect of psychogenic factors on the course of the disease.

CONCLUSION

The treatment of patients with rheumatoid arthritis requires an understanding of the systemic nature of the disease, its many clinical manifestations, its varied clinical course and the persons afflicted. Until the advent of a specific therapeutic agent, treatment of this disease necessitates a comprehensive approach of the type briefly described.

RENAL PTOSIS AND ITS TREATMENT

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A listless meeting of urologists can be suddenly animated by the simple word "nephropexy." This usually will bring forth varying shades of opinion, many of which are extreme. The proponents of the operation will cite figures to show that the percentage of patients cured by this operation is as high as, or indeed higher than, that following most surgical procedures. In their opinion, the poor results from nephropexy result from improper selection of patients or poor surgical technic. The opponents of the operation are equally convinced that nephropexy results in only a small percentage of cures and that the failures are an inherent property of an ill conceived operation.

The urologic literature contains numerous reports which are enthusiastic about the brilliant results achieved by nephropexy. It will suffice to refer to but two of these reports. Mathé,¹ employing a technic for nephropexy which he devised in 139 cases, was able to cure or relieve 98.7 per cent of the patients. Post-operative pyelographic studies carried out in 71 cases revealed successful fixation of the kidney in 100 per

4. Short, C. L., and Bauer, W.: The Treatment of Rheumatoid Arthritis, New England J. Med. 227: 442-450, 1942.

5. Short, C. L., and Bauer, W.: The Course of Rheumatoid Arthritis in Patients Receiving Simple Medical and Orthopedic Measures, New England J. Med. 238: 142-148, 1948.

6. Ragan, C., and Tyson, T. L.: Chrysotherapy in Rheumatoid Arthritis: Three-Year Study of One Hundred and Forty-Two Cases, Am J. Med. 1: 252-256, 1946.

Read before the meeting of the Hollywood Academy of Medicine, Los Angeles, Nov. 13, 1947.

From the Section on Urology, Mayo Clinic (Drs. Braasch and Greene), and the Mayo Foundation (Dr. Goyanna, Fellow in Urology).

1. Mathé, C. P.: The Present-Day Status of Nephropexy and End Results in Three Hundred and Eighty-Four Operative Cases, Urol. & Cutan. Rev. 41: 772-779 (Nov.) 1937.

instances, denervation of the renal pedicle was performed simultaneously with nephropexy. The value of this procedure could not be determined, but since 3 of the patients in whom denervation was performed failed to get any relief of symptoms and since our experience with this operation in other types of cases has not been particularly reassuring, it would seem questionable whether it could be as important as some surgeons seem to think.

Nephropexy was performed in numerous other instances, either secondary to, or in conjunction with, other surgical procedures about the kidney. These cases were not included in the report, inasmuch as more than one surgical procedure was carried out and the value of nephropexy alone could not be determined. Nephropexy was performed more or less as a routine procedure after plastic repair for obstruction at or near the ureteropelvic juncture. It also was performed in many instances secondary to pelvolithotomy, to division of obstructing anomalous renal vessels or tissue bands and to renal malposition. These cases are not included in this report, although it cannot be denied that in some cases nephroptosis may have been an etiologic factor.

Results of Nephropexy.—Of the 21 patients who underwent nephropexy, 11 experienced more or less subjective relief from their symptoms; 10 patients were not subjectively benefited by the operation. Of the 11 patients with favorable results, only 3 had complete and permanent relief. In the other 8 cases the original pain was largely relieved, but other symptoms continued. A correlation could not be found between the degree of ptosis and the subjective results of nephropexy. It was noted that the incidence of pyelectasis or delay in emptying time was somewhat greater in the group of patients who received good subjective results.

It is difficult to explain the difference between our postoperative results—more than 50 per cent failure—and those achieved by urologists previously cited. It certainly was not due to failure of surgical technic, since the preoperative degree of ptosis was found to exist in only 1 of our patients examined after operation. It is possible that some of the uniformly good results claimed by some urologists were based on postoperative improvement reported within a few months after nephropexy. Several of our patients who reported no relief said they were much improved during a period of six months to a year after operation, but later symptoms similar to the previous ones returned. In 2 of our unimproved patients subsequent extrarenal complications developed to explain their pain. In 1 of these 2 patients acute disease of the gallbladder developed a year later, and cholecystectomy relieved the patient of her former symptoms. At the time of her clinical examination at the clinic the cholecystogram revealed no abnormality. The other of the 2 patients died a year later, and autopsy revealed a diffuse carcinoma involving the head of the pancreas, the liver and the gallbladder. These lesions were missed completely in spite of a careful clinical examination. Another patient without relief after nephropexy underwent nephrectomy elsewhere about two years later. Subsequently she reported that she had the same symptoms as before. It is evident that her symptoms, which we thought were typical of renal origin, had nothing to do with the kidney.

It is possible that we are somewhat pessimistic as to the results from nephropexy because of the many patients observed at the clinic who had had this operation performed elsewhere. Most of these patients came

with symptoms similar to those that existed prior to operation, in spite of the fact that the kidney was successfully anchored. Many of these patients had experienced temporary relief of symptoms after nephropexy, and then either the former symptoms returned or other complaints developed. To complicate the situation, in several patients who had been subjected to nephropexy elsewhere with relief of so-called renal symptoms, our urographic studies showed that the kidney which had been operated on had fallen to its preoperative low position. In another patient a right nephropexy had been performed elsewhere with relief of symptoms, but pyelograms and delayed urograms showed evidence of retention in both renal pelves. From this it was evident that atonic renal retention could be present without actual obstruction and without causing any symptoms. It is not unusual for patients who have been subjected to nephropexy to say that their symptoms have switched to the other kidney, in spite of the fact that the other kidney may be normal in position and function.

Many patients said that they had undergone elsewhere several operations prior to nephropexy, without relief of symptoms. Certainly one should hesitate before advising nephropexy on a patient who has already had cholecystectomy, appendectomy and possibly hysterectomy.

It is surprising how many patients with renal ptosis were benefited by means of palliative and corrective measures. Although renal pads, corsets or other types of abdominal support may not keep the kidney in place, yet many of these patients stated that such support gave them much relief. The relief can be explained either on psychologic grounds, on the basis of counterirritation or on the grounds that lumbosacral pain often is helped by some form of back support. Other measures, such as increased and nourishing diet, reduction in work and periods of rest and recreation, were of definite help in some cases, particularly if a gain in weight was effected. Psychosomatic treatment has benefited many and, if skillfully employed, may be the key to recovery. Many patients were included in this list who were in the menopause and who stated that their improvement became permanent after this period had been passed.

According to these observations, it would be no exaggeration to say that the problem of nephroptosis is not a simple one. It is evident that any one who advises nephropexy without careful and thorough consideration of all the factors involved and without giving the patient the benefit of other methods of treatment is doing that patient an injustice. The number of patients with nephroptosis who present clinical data which clearly indicate nephropexy is exceedingly small. These data should include not only intermittent pain with definite renal radiation, but also urographic evidence of borderline pyelectasis and delayed renal drainage. Even with this careful selection, no assurance of permanent relief of symptoms after nephropexy can be made. The fact that a few carefully selected patients have been benefited may justify the operation in occasional cases.

SUMMARY AND CONCLUSIONS

Nephroptosis occurs most frequently in thin, underweight women and most commonly affects the right kidney. Nephroptosis is not necessarily an abnormal condition, since it is present in a large number of cases, causing no symptoms or evidence of renal pathology.

The subjective symptoms accompanying renal ptosis are so variable and ill defined that they offer an uncertain guide in determining whether renal ptosis is an

etiologic factor. No correlation could be found between the varying grades of ptosis and the symptoms which might possibly be related to the kidney. Borderline pyelectasis, the so-called flabby pelvis, is often observed to be associated with renal ptosis.

Delayed renal drainage may be demonstrated in many cases by the delayed urogram. No correlation could be found in our series of patients between the varying degrees of ptosis and the presence or absence of pyelectasis or delay in emptying time.

Most patients with nephroptosis will be benefited by nonoperative measures.

Even in cases in which the symptoms point directly toward a renal origin, urographic data, such as evidence of a borderline pyelectasis or delayed drainage, should be required before nephropexy is considered.

Although evidence of delayed renal drainage, such as borderline pyelectasis and retained medium as observed in the delayed urogram, does not necessarily indicate obstruction, yet nephropexy is advisable only when such evidence is present, combined with symptoms of definite renal origin.

The fact that the symptoms were relieved in less than 50 per cent of our patients subjected to nephropexy after careful selection would, in itself, make one hesitate before advising this operation. A conservative attitude is substantiated by the fact that many patients observed at the clinic had previously undergone nephropexy elsewhere without relief of symptoms.

SURGICAL AND ROENTGENOLOGIC ASPECTS OF DUODENAL DIVERTICULA

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Much has been written concerning the frequency of occurrence of duodenal diverticula.¹ Too little stress, however, has been placed on the fact that in certain cases these diverticula cause symptoms which may be cured by surgical intervention. We agree that the majority of these lesions are innocuous and asymptomatic, but, on the other hand, we concur with Alesen² that symptoms do occur with sufficient frequency to cause the clinician and surgeon to keep this entity in mind.

We report 3 cases in which symptoms were eliminated by resection of the diverticula. One of the cases was of unusual interest, because the diverticulum contained an active ulcer in its base and because it occurred in the third portion of the duodenum. No such case to our knowledge has been reported. Most duodenal diverticula are situated adjacent to the ducts of Wirsung or Santorini, in the second portion of the duodenum.

ROENTGENOLOGIC ASPECTS

The manifestations of a diverticulum of the duodenum are essentially the same as those of a diverticu-

lum occurring elsewhere in the alimentary tract.³ The main characteristics are those of an outpouching, usually from the mesial wall of the second portion of the duodenum, connecting to the small intestine by means of a stalk. A single sac is usually present, but multiple outpouchings may occur.⁴ The diverticulum varies in size from several millimeters to 7 or 8 cm. As a general rule it is easily movable under the palpating finger, as observed during fluoroscopy. Studies of stasis, at twenty-four hours and forty-eight hours, often show a retention of the barium sulfate in the diverticulum.

In the roentgenologic differential diagnosis one must consider:

1. *Pseudo or Prestenotic Diverticulum*.—This deformity occurs with an ulcer of the first portion of the duodenum. The ulcer commonly has its origin in the duodenal bulb, and one can usually identify a niche or a crater.

2. *Localized Distention of the Second and Third Portions of the Duodenum*.—Such distention may be produced by a tight superior mesenteric vessel, which may present a picture suggesting true sacculatation. Similar dilatation may occur at the point of trifurcation of the gastric omental sac, where it forms the hepaticoduodenal ligament, the duodenocolic ligament and the hepaticoduodenocolic ligament. In both these conditions a stalk is not present. The enlargement is continuous with the long axis of the bowel. Furthermore, these dilatations can be readily recognized when the patient is examined both in the prone and the supine position. When the patient lies on his back, the distention of the duodenum becomes pronounced; when he assumes the prone position, the distention will be lessened or disappear entirely.

3. *Malignant Condition*.—Occasionally an annular carcinoma must be differentiated. In carcinomatous lesions there is distortion and discontinuity of the small bowel mucosa, whereas in a diverticulum the mucosa is continuous and undisturbed. The rarity of a malignant condition of the duodenum has been reported elsewhere.⁵

4. *Benign Tumors*.—A benign tumor is usually not confused with a diverticulum. As a rule it casts a negative shadow in contrast to the usual homogeneous dense shadow, produced by a diverticulum filled with barium sulfate.

In our experience, diverticulum of the duodenum occurred in 1.5 per cent of all patients examined.

CLINICAL ASPECTS

It is characteristic that patients exhibiting symptoms all have one symptom in common; i. e., distress during or after eating. Nearly all have been previously treated for ulcer or have submitted to surgical treatment for supposed disease of the gallbladder or appendix. Some have definitely been labeled as psychoneurotic in spite of a long history of dyspepsia and positive roentgeno-

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logic evidence of duodenal diverticula. It is our belief that patients who present a history of dyspepsia, characterized by pain and fullness after meals, and in whom diverticula can be demonstrated radiologically, should be entitled to surgical extirpation of the lesion, if other causes have been eliminated. We feel that these patients should not be operated on until the history, physical



Fig. 1 (case 1).—A, preoperative roentgenogram. This shows a typical large diverticulum projecting from the mesial wall of the ascending limb of the duodenum (third part), demonstrating both the pouch and the stalk. On fluoroscopy, the diverticulum filled readily. Despite deep digital palpation, it could not be emptied. The diverticulum measured 3 cm. by 5.2 cm. The stalk measured 0.6 cm in diameter. B, roentgenogram taken twenty-four hours preoperatively. The stomach has completely emptied. Only fragments of the mediums are seen in the upper part of the small intestine. However, there was almost complete retention of the meal in the diverticulum. The stalk was again demonstrated, but its communication with the third portion of the duodenum was not seen on this hourly examination, thus indicating that the pouch did not affect the transit of the meal through the duodenal loop.

examination and roentgenologic and laboratory studies have eliminated other factors that could produce these symptoms, and, certainly, no patient should be operated on solely because of roentgenologic evidence of the diverticulum. In the following case reports, it will be noted that these criteria have been adhered to.

REPORT OF CASES

CASE 1.—A 48 year old business executive, who complained of dyspepsia and epigastric pain intermittently for fifteen years prior to examination, had been told previously that he had a duodenal ulcer. At various times he had been treated with alkalis, antispasmodics and ulcer diets. On occasion, he had been relieved by this treatment, but the symptoms always recurred with the slightest deviation from this routine. For the past year, in spite of rather rigorous conservative management, the patient had persistent pain and stated that he constantly suffered from indigestion. Roentgenographic examination (Conti) revealed a large diverticulum of the third portion of the duodenum (fig. 1).

At operation the diverticulum was resected (Stevens and Foltz) without opening of the duodenum. The pathologic report revealed acute and chronic diverticulitis with ulceration of the base.

Postoperative convalescence was uneventful. The patient at the time of writing had remained asymptomatic for approximately one year. Roentgenograms showed a normal duodenal pattern (fig. 2).

CASE 2.—A 33 year old fireman was admitted to the hospital on May 25, 1945, for medical observation. His chief complaint was that of epigastric pain following eating, which had persisted for some months despite medical treatment. Roentgenograms showed a small diverticulum of the duodenum. Because it is the general belief that a diverticulum of this size rarely produces symptoms, medical treatment was instituted, and the patient was kept under close observation. However,

the symptoms persisted. At the patient's request, surgical exploration was done (Stevens and Foltz) on July 11. The diverticulum was not evident; therefore the duodenum was opened longitudinally, and a diverticulum about 2 cm. deep was seen adjacent to the accessory pancreatic duct. The diverticulum was inverted and excised. The incision in the duodenum was closed transversely. Pathologic examination revealed ulceration of the base of the diverticulum, with polymorphonuclear and round cell infiltration. Convalescence was uneventful. The patient was completely asymptomatic following the operation and had remained so for the six months that follow-up was possible.

CASE 3.—A pharmacist's mate second class was admitted to the hospital on Oct. 23, 1945, with the chief complaint of epigastric pain following meals, which had persisted for four years prior to examination. In addition, nausea was present with the onset of the pain and, on many occasions, vomiting occurred shortly after the onset. There was a complaint of a tight full feeling in the upper part of the abdomen for about twelve hours following one of these typical attacks. In September, roentgenologic studies had revealed a duodenal diverticulum, when the patient was admitted to the hospital for operation. The patient's past history revealed that in January 1944 a cholecystectomy had been performed, with no relief of symptoms. Results of the physical examination were essentially negative throughout, except for some slight tenderness in the upper right quadrant of the abdomen. At operation (Stevens) the diverticulum was not seen until the duodenum was opened. A diverticulum adjacent to the duct of Wirsung was then seen, extending 1 inch (about 2.5 cm.) into the pancreas. The operative procedure was similar to that in case 2, opening the duodenum longitudinally, inverting the diverticulum and excising. The duodenum was closed transversely. Exploration had been done elsewhere, because of a roentgenologic diagnosis of duodenal diverticulum, and the diverticulum had not been observed. The pathologic report revealed a diverticulum lined by glandular mucosa, having a well marked muscularis mucosa and mucous glands under the muscularis mucosa resembling Brunner's glands, with chronic inflammatory exudate between the glands. The postoperative convalescence was uneventful, and the patient had remained free of symptoms for the three months during which follow-up was possible.

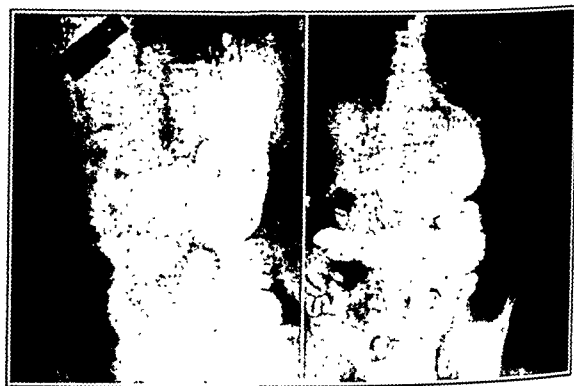


Fig. 2 (case 1).—Postoperative roentgenograms. It is apparent that there was no residual deformity of the duodenum and that the diverticulum was completely resected.

SUMMARY

Three cases of duodenal diverticula are reported. All 3 patients presented symptoms of dyspepsia, pain during or after eating and positive roentgenographic evidence of duodenal diverticula. Surgical extirpation of the diverticula afforded complete relief in all 3 cases, all other measures having failed. In 1 of these cases an ulcer was present in the base of the diverticulum. This diverticulum was located in the third portion of the

duodenum. In 2 cases the diverticulum could not be located until the duodenum was opened, because the diverticulum was a hidden projection into the pancreas.

CONCLUSIONS

1. The majority of duodenal diverticula do not produce symptoms and require no treatment.
2. Some diverticula of the duodenum produce symptoms which may be cured by surgical treatment.
3. It is sometimes necessary to open the duodenum to locate a diverticulum at operation.

EXCESSIVE HYPOPROTHROMBINEMIA DUE TO "DICUMAROL"

Its Treatment with Lyophilized Plasma

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Twenty to 25 per cent of persons who receive "dicumarol" in the treatment of thromboembolic disease are hyperreactors to the drug, in that the conventional dosage produces an excessive elevation of the prothrombin time to levels at which hemorrhage may occur.¹ Bleeding takes place in approximately 6 per cent and is of major importance in 1 to 2 per cent, with occasional fatalities being reported.

Two therapeutic measures have been used in the management of dangerously elevated prothrombin times. First, large parenteral doses of synthetic vitamin K in the form of menadione sodium bisulfite² or vitamin K₁ oxide³ have been shown to reduce an excessive elevation of prothrombin time to safe range within twelve to forty-eight hours in approximately 85 per cent of persons. It thus appears that the results of this form of therapy are apparent only after a significant interval and may not occur at all in certain patients. Second, transfusions of whole fresh blood or fresh plasma have been employed when actual bleeding is taking place because of the delay and occasional failure to respond to the massive dosage of vitamin K. Some investigators⁴ have stated that no beneficial effect in reducing the prothrombin time or the degree of bleeding results from transfusion. Others⁵ report favorable results of transfusion both in lowering the prothrombin time and in decreasing the hemorrhagic tendency, with the recommendation that repeated transfusion may be necessary due to the transitory effect.

It was believed that the use of lyophilized plasma warranted a clinical trial in cases of hemorrhage

associated with excessive hypoprothrombinemia due to "dicumarol" because lyophilized plasma, reconstituted with 0.1 per cent citric acid and distilled water, has been shown by Strumia⁶ to possess a normal prothrombin content comparable with that of fresh whole blood. In addition, 500 cc. of plasma would have the equivalent effect of 1,000 cc. of whole blood in reducing the prothrombin time, inasmuch as the effective factors in combating the hypoprothrombinemia are considered to be situated in the plasma.

Although current sources of pooled lyophilized plasma introduce the potential risk of homologous serum hepatitis, this form of therapy has certain advantages that warrant consideration. In the first place, the general availability of this material where blood banks are not at hand justify its employment. Furthermore, problems of grouping do not arise in patients in whom sudden hemorrhage demands immediate control.

It is the purpose of this report to record observations on the efficacy of lyophilized plasma in reducing the excessive hypoprothrombinemia occurring in the course of "dicumarol" anticoagulant therapy.

MATERIALS AND METHODS

Determinations of prothrombin time were performed on whole plasma, according to a modification⁷ of Quick's technic,⁸ with commercially supplied rabbit lung as the source of thromboplastin, 0.1 molar sodium oxalate as the anticoagulant and 0.025 molar calcium chloride. Normal prothrombin time in this laboratory with the technic employed was found to be 14 (± 2)

TABLE 1.—Prothrombin Time and Activity of Random Samples of Reconstituted Lyophilized Plasma *

Specimen	Whole Plasma Prothrombin Time (Seconds)	Percentage of Normal Prothrombin Activity
1	13.5	100
2	15.1	75
3	14.9	80
4	12.7	100+
5	15.1	75
6	14.0	100+
7	14.1	100
8	14.2	97
9	15.1	75
10	15.0	78
11	14.2	98
12	14.7	87
13	15.1	75
14	14.4	90
15	15.0	75
16	14.5	90

* Red Cross.

seconds. The percentage of normal prothrombin activity was determined from a logarithmic prothrombin activity curve constructed according to Quick.

"Dicumarol" was administered in accepted dosage of 300 mg. on the first day, 200 mg. on the second day and subsequent daily dosage depending on the results of the prothrombin time of that day. It was attempted to prolong the prothrombin time to an optimal reading of 27 seconds, which is 20 per cent of normal activity. The effective therapeutic range was

From the Departments of Medicine and Surgery, Columbia University College of Physicians and Surgeons, and The Presbyterian Hospital.

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3. Davidson, C. S.; Freed, J. H., and MacDonald, H.: The Effect of Vitamin K₁ Oxide upon the Anticoagulant Properties of Dicumarol, *Am. J. M. Sc.* 210: 634, 1945.

4. Wasserman, L. R., and Stats, D.: Clinical Observations on the Effect of 3,3'-Methylenebis (4-Hydroxycoumarin), *Am. J. M. Sc.* 206: 466, 1943. Townsend, S. R., and Mills, E. S.: The Effect of the Synthetic Hemorrhagic Agent, 3,3'-Methylenebis (4-Hydroxycoumarin) in Prolonging the Coagulation and Prothrombin Time in the Human Subject, *Canad. M. A. J.* 46: 214, 1942.

5. Meyer, O. O.; Bingham, J. B., and Axelrod, V. H.: Studies on the Hemorrhagic Agent, 3,3'-Methylenebis (4-Hydroxycoumarin), *Am. J. M. Sc.* 204: 11, 1942.

6. Strumia, M. M.: Preservation of Prothrombin in Dried Plasma, *J. A. M. A.* 119: 710 (June 27) 1942.

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considered to be between 22 and 44 seconds, which is respectively 30 per cent and 10 per cent of normal activity. In this series of patients with thromboembolism who were treated with anticoagulants, hemorrhage has rarely occurred below 44 seconds, 10 per cent of normal activity.

RESULTS

The previous observations⁶ on the prothrombin content of lyophilized plasma were confirmed. It was noted that the prothrombin activity of these random samples averaged between 75 per cent and 100 per cent of normal (table 1).

On the basis of this finding, lyophilized plasma in doses of 500 cc. was administered to patients in whom an excessive hypoprothrombinemia had occurred during "dicumarol" therapy. The results in 13 patients are presented in table 2. In this group hemorrhage of significant severity was not taking place at the time of transfusion, so that observations as to the effect of the plasma on actual bleeding were not possible. The lyophilized plasma was effective in producing an immediate reduction of prothrombin time to safe range. It was apparent that an upswing toward the pretreatment level occurred as soon as six hours in some

TABLE 2.—Changes in Prothrombin Time (Seconds) Following of Lyophilized Plasma in Patients with Hypoprothrombinemia Due to "Dicumarol"

Patient	Before Plasma	After Plasma					
		Immediate	3 Hours	6 Hours	9 Hours	15 Hours	20 Hours
1	58.0	27.8	31.8	....	....	47.5	....
2	43.0	26.5	....	....	....	33.0	....
3	43.0	23.8	27.0	27.6	....	....	33.5
4	54.2	27.6	34.9	38.7	....	38.5	....
5	97.0	25.6	39.4	49.0	67.0	....	....
6	67.0	28.6	....	30.9	....	33.7	....
7	76.1	22.5	27.5	17.0	....	....	....
8	90.0	....	35.0	45.0	....	....	60.0
9	67.5	27.4	....	....	....	37.4	....
10	78.0	31.4	27.3	32.1	....	....	....
11	39.5	29.5	26.5	28.2	....	....	....
12	60.0	38.0	37.5	42.0	....	....	....
13	85.0	26.0	34.5	....	....	58.5	....

patients, similar to the transient effects following whole blood transfusion as previously reported.⁶ It is thus evident that, pending the more permanent but delayed effects of vitamin K, repeated plasma infusions may be essential to maintain a prothrombin time in the safe range.

SUMMARY

It has been confirmed that lyophilized plasma, reconstituted with 0.1 per cent citric acid solution, contains normal prothrombin activity. This plasma is effective in producing an immediate reduction of prothrombin time to safe range in persons with excessively elevated levels due to administration of "dicumarol." Effective reduction in prothrombin time may be maintained for as little as six hours, thus necessitating multiple transfusions in certain instances. Pooled lyophilized plasma should be employed only when grouped fresh blood is not available owing to the added risk of transmission of homologous serum hepatitis.

EFFECT OF UREA ON BACTERICIDAL ACTION OF SULFONAMIDE DRUGS

Report of Five Cases of Bacterial Meningitis

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In 1942 Tsuchiya¹ and his co-workers reported in vitro experiments with urea and the sulfonamide compounds which indicated that the inhibitory effect of sulfadiazine on the growth of *Escherichia coli* is significantly increased by the presence of urea, even when methionine, a sulfonamide inhibitor, is present.

They extended their observations to other sulfonamide compounds, using para-aminobenzoic acid as the sulfonamide inhibitor, and also showed that three strains of sulfathiazole-resistant staphylococci in a synthetic medium were susceptible to urea-sodium sulfathiazole combinations. They attributed this beneficial effect of urea to its inhibition of the sulfonamide inhibitors and to an enhancement of the bacteriostatic action of the sulfonamide compounds.

The development of sulfonamide resistance by bacteria has become significant, and any agent which may overcome this resistance may play an increasingly important role. McLeod² showed that the development of sulfapyridine fastness in a strain of *Pneumococcus* type I is accompanied by a greatly increased production of sulfonamide inhibitor. Schmidt³ and his co-workers have shown that strains of *Pneumococcus* type I and type III can be made resistant to sulfapyridine in vitro and in vivo in mice. Vivino and Spink⁴ reported 2 cases of staphylococcal bacteremia, both strains becoming markedly sulfonamide resistant, one after only eight days of therapy.

The mechanism of bacterial inhibition by the sulfonamide compounds may be due to a depression of the enzyme reaction in the bacterial cell. Green⁵ has produced bacterial extracts containing a proliferation factor which powerfully stimulates the reproductive rate of many bacteria, and it is believed that this proliferation factor stimulates the same enzyme reaction in the bacterial cell which sulfonamide compounds inhibit. The sensitivity to sulfanilamide of any bacterial strain may be conditioned by the rate at which the autolysing organism liberates this "P" factor. The effect of urea on this factor is unknown. It is known that urea renders sulfonamide compounds more soluble and that it also has a solvent action on pus, debris and necrotic tissue which act as sulfonamide inhibitors.⁶ Urea has the additional advantages of being relatively nontoxic.

Mr. Alfred Reich cooperated in the bacteriologic studies. From the Cleveland Clinic. Dr. LaLonde was formerly Staff Assistant, Department of Neurosurgery.

1. Tsuchiya, H. M.; Tenenberg, D. J.; Clark, W. G., and Strakosch, E. A.: Antagonism of Anti-Sulfonamide Effect of Methionine, and Enhancement of Bacteriostatic Action of Sulfonamide by Urea, *Proc. Soc. Exper. Biol. & Med.* 50: 262-266 (June) 1942; In Vitro Effect of Urea-Sulfathiazole Combination on Sulfathiazole-Resistant Staphylococci, *ibid.* 51: 245-246 (Nov.) 1942.

2. McLeod, C. M.: Inhibition of Bacteriostatic Action of Sulfonamide Drugs by Substances of Animal and Bacterial Origin, *J. Exper. Med.* 72: 217-232 (Sept.) 1940.

3. Schmidt, L. H.; Sesler, C. L., and Dettwiler, H. A.: Studies on Sulfonamide-Resistant Organisms: Development of Sulfapyridine Resistance by *Pneumococci*, *J. Pharmacol. & Exper. Therap.* 74: 175-189 (Feb.) 1942.

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6. Holder, H. G., and Mackay, E. M.: Wound Therapy, with Special Reference to Application of Carbamide-Sulfonamide Mixtures to Contaminated and Infected Wounds, *Mil. Surgeon* 90: 509-518 (May) 1942.

From the Blood: Preliminary Report of Experimental and Clinical Studies Proc. Staff Meet., Mayo Clin. 16: 388, 1941. Davidson, C. S., and MacDonald, H.: A Critical Study of the Action of 3,3'-Methylenbis (4-Hydroxycoumarin), *Am. J. M. Sc.* 205: 24, 1943.

mildly bacteriostatic, diuretic, simple to administer and inexpensive.⁷

Clinical reports appeared which tend to confirm the laboratory experiments. Schnitker and Lenhoff⁸ employed urea and sulfadiazine or sulfathiazole in the treatment of 40 patients with sulfonamide-resistant gonorrhea, among whom 52.5 per cent cures were reported. However, they administered only 30 Gm. of urea orally daily, which by present standards is a minute dose.

In 1945 Ecker⁹ reported his experiences with the use of urea and the sulfonamide compounds in the successful treatment of a case of meningitis due to *Esch. coli* which failed to respond to penicillin and sulfadiazine.

In 1946, Vesell, Gross and Sussman¹⁰ reported the use of urea and sodium sulfadiazine intravenously in the successful treatment of a case of subacute bacterial endocarditis which had failed to respond to sulfadiazine alone. They stressed the importance of increased solubility of sulfadiazine in the urine with reduction of sulfadiazine crystalluria when urea is given with massive doses of sodium sulfadiazine.

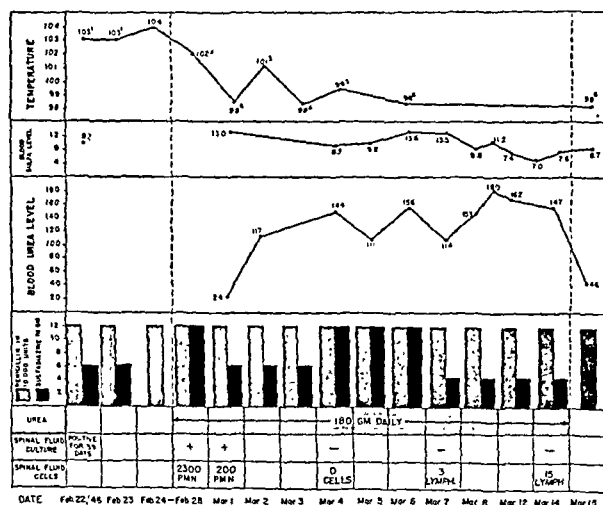
REPORTS OF CASES

CASE 1.—A man, aged 43, contracted meningitis due to *Alcaligenes faecalis* after the breaking down of his operative wound following removal of a large sacral meningocele. For three months after operation large doses of sulfadiazine orally and penicillin intramuscularly and intrathecally were given in an attempt to prevent localized meningitis at the operative site from spreading. However, on Dec. 26, 1945, *A. faecalis* was grown from spinal fluid. Despite the continued use of sulfonamide compounds and penicillin intramuscularly and intrathecally, spinal fluid cultures remained positive and the patient's condition grew steadily worse. Streptomycin was then tried by intrathecal injection; although this drug temporarily sterilized the spinal fluid it had to be discontinued because of excruciating leg pain when injected into the lumbar subarachnoid space, and head pain when injected into the cisterna magna. By Feb. 28, 1946, the patient was in extremis. Up to this time he had received a total of 39,256,000 units of penicillin intramuscularly and 12,546,000 units intrathecally, 347.5 Gm. of sulfadiazine orally and intravenously, and 200,000 units of streptomycin intrathecally.¹¹ He was then started on urea, 30 Gm. orally every four hours, and penicillin was continued as before, 30,000 units intramuscularly every three hours. Sulfadiazine, which had been discontinued four days previously, was again started, 2 Gm. every four hours.

Temperature returned to normal in twenty-four hours and culture of spinal fluid was sterile four days after starting urea. Cell count in the spinal fluid dropped from 2,300 polymorphonuclear cells to zero in that time. Spinal fluid on two subsequent examinations was sterile; one specimen contained 3 lymphocytes and one 15 lymphocytes. The patient became alert and after fifteen days of this therapy was discharged (the chart). The patient returned to his job one month later and has remained well. Blood urea during urea therapy ranged from 24 mg. per hundred cubic centimeters to a maximum of 180.¹² The only symptoms attributed to

the elevated blood urea were somnolence and loss of appetite. Blood sulfadiazine level ranged from 4.1 mg. per hundred cubic centimeters to 16.5 before urea was given and a maximum of 13.5 after it was started. The response in this case was dramatic and undoubtedly due to the combined use of urea and sulfadiazine.

CASE 2.—A man, aged 53, contracted meningitis due to *Klebsiella pneumoniae* after removal of an acoustic neuroma on Sept. 12, 1946. Because the mastoid process was entered during the operation he was given a prophylactic course of penicillin, 30,000 units intramuscularly at three hour intervals for six days. Because of continued fever a second course of penicillin was started on the fifteenth postoperative day. On the eighteenth postoperative day, spinal puncture disclosed viscid, brown, turbid fluid which on culture grew *K. pneumoniae*. Accurate cell count could not be made. He was started on sulfadiazine, 1 Gm. every four hours. On the twentieth postoperative day penicillin was discontinued and 30 Gm. doses of urea every four hours were started with sulfadiazine dosage continued as before.¹³ Six days after starting this therapy spinal fluid culture was still positive, but on the ninth day it was sterile, temperature reached normal and therapy was stopped. He was discharged four days later. He returned to his job and was in good health when seen



The chart shows the effect of introducing urea into the therapy of case 1. Similar records were kept for the other cases.

six months after discharge. The recovery in this case was unequivocally due to the combination of urea and sulfadiazine, as the patient received no other therapy during the period of response.

CASE 3.—A man, aged 31, on July 16, 1946, sustained a compound, comminuted skull fracture in the right parietal region extending into the right petrous bone, with resulting cerebrospinal fluid rhinorrhea and otorrhea, and Bell's palsy on the right side. His scalp wound was sutured. Sulfadiazine in doses of 1 Gm. orally every four hours and penicillin 30,000 units intramuscularly every three hours were started as a prophylactic measure. On the seventh day the otorrhea ceased, and the scalp wound was found to be infected. Lumbar puncture on the eighth day revealed a pressure of 290 mm. water, and the fluid contained 1,600 polymorphonuclear cells with *Esch. coli* on culture. A secondary debridement of the scalp was performed and urea was started in doses of 30 Gm. orally every four hours in addition to the sulfadiazine which the patient was already receiving. Penicillin was discontinued, a total of 2,160,000 units having been given. Fifty thousand units of streptomycin was injected intrathecally at twelve hour intervals on the first four days of urea therapy. These injections always caused severe leg pain and were discontinued. On the third day of urea therapy spinal fluid culture was

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11. This patient had several generalized convulsions twelve days after the intrathecal injection of streptomycin and while receiving penicillin intrathecally. He has had petit mal attacks since his discharge until recently.

12. On one occasion simultaneous samples of blood and spinal fluid revealed blood urea of 111 mg. per hundred cubic centimeters and spinal fluid urea of 195 mg. per hundred cubic centimeters.

13. The bitter taste of urea was masked somewhat by giving it in cold fruit juice.

still positive, but it was sterile on the fifth day and on three subsequent examinations. Sulfadiazine and urea were discontinued after fifteen days of therapy and the patient was discharged. In this case the patient contracted meningitis due to *Esch. coli* while on penicillin and sulfadiazine. Spinal fluid cultures remained positive during the administration of streptomycin and subsequently became sterile while the patient was receiving urea and sulfadiazine.

CASE 4.—A boy aged 6 months contracted an infection of the respiratory tract on March 17, 1947. On March 18, his temperature was 105 F. and he began vomiting. On March 22 he had a generalized convulsion. He was hospitalized and a diagnosis of pneumococcal meningitis was made. He was given 2 Gm. of sulfadiazine daily, and 20,000 units of penicillin intramuscularly every three hours and 25,000 units intrathecally daily. There was gradual improvement, and the spinal fluid cell count dropped from 25,000 to 10. He was discharged on April 12.

On April 24 symptoms of meningitis recurred. He was transferred to Cleveland Clinic on April 28. His temperature was 104 F., the anterior fontanel was bulging, there was spasticity of the extremities, and moderate opisthotonus. Ventricular fluid on this date contained 500 polymorphonuclear cells and 102 mg. protein and grew *Staphylococcus albus*. On the day of entry, urea and sulfadiazine were started, 0.5 Gm. and 0.25 Gm. respectively, through a stomach tube. On the second day of therapy a small, flexible, plastic tube was introduced through a needle into the lumbar spinal canal for continuous drainage. On the third day the temperature was 102.4 F., and the spinal fluid collected from the indwelling tube contained 300 polymorphonuclear cells. Dosage of urea and sulfadiazine was reduced to every eight hours. Fluid collected on the fifth day contained 150 polymorphonuclear cells and was sterile. On the eighth day the plastic tube ceased to function and was removed. Temperature at this time was normal. Sulfadiazine and urea were discontinued on the twelfth day. Fluid removed by cisternal puncture on the sixteenth day contained 1 cell and 33 mg. protein, and was sterile. The patient was discharged on the eighteenth day and was last seen six weeks later. At this time he was found to have some neurologic sequelae of the infection but the anterior fontanel was soft and there was no fever. The significance of this case is difficult to evaluate in view of the debatable identity of the responsible organism, but the clinical response to therapy is unquestionable.

CASE 5.—A girl aged 5 months was admitted to Cleveland Clinic on May 20, 1947, for treatment of congenital communicating hydrocephalus. In preparation for operation, continuous spinal drainage was instituted by means of a small, flexible, plastic tube introduced through a needle into the lumbar spinal canal on the third hospital day. A benzalkonium chloride dressing over the tube became contaminated with feces, and on the eleventh day temperature rose to 104.5 F. The anterior fontanel was tense. Fifteen thousand units of penicillin intramuscularly every three hours was started. Temperature remained elevated and on the thirteenth day the tube in the spinal canal was removed, as it had ceased to drain. Ventricular fluid contained 58 polymorphonuclear cells but was sterile. Penicillin was discontinued on the fifteenth day because of failure to control the fever. On the sixteenth day ventricular fluid contained no cells but grew *Esch. coli* on culture. On the twenty-second day ventricular fluid again grew *Esch. coli*, and sulfadiazine and urea, 0.2 Gm. and 0.5 Gm. respectively, were administered every three hours through a stomach tube. On the twenty-fourth day ventricular fluid was still positive for *Esch. coli* and contained 51 polymorphonuclear cells. Temperature became normal on the twenty-sixth hospital day, although the fluid culture remained positive until the thirtieth day. An operation for hydrocephalus was carried out on the thirty-fifth day. Urea and sulfadiazine were discontinued two days later when the temperature became normal. The patient was discharged on the ninth postoperative day with no evidence of infection. The response to the therapy in this case was unequivocal.

SUMMARY

We have successfully treated with urea and sulfadiazine a case of meningitis due to *Alcaligenes faecalis* which did not respond to penicillin and sulfadiazine, and in which streptomycin was not tolerated; a case of meningitis due to *Klebsiella pneumoniae*, which developed while the patient was receiving prophylactic doses of penicillin; 2 cases of meningitis due to *Escherichia coli* as well as a case of meningitis probably due to *Staphylococcus albus*. Since this form of therapy is simple, safe and effective it should be tried in sulfonamide-resistant infections before resorting to streptomycin.

A case of tuberculous meningitis and 1 case of meningitis due to *Torula* failed to respond to urea and sulfadiazine.

AUREOMYCIN: A NEW ANTIBIOTIC WITH VIRUCIDAL PROPERTIES

I. A Preliminary Report on Successful Treatment in Twenty-Five Cases of Lymphogranuloma Venereum

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As a result of a comprehensive screening program at the Lederle Laboratories Division, American Cyanamid Company, a substance has been obtained from a *Streptomyces* which gave promise of possessing unusual antibiotic properties. The antibiotic has been named aureomycin, and a statement regarding its specific properties and chemical purification will be published elsewhere.¹ Of special interest to us was the striking spectrum of activity exhibited by this antibiotic against many rickettsiae and certain viruses.² In particular, it was noted that aureomycin was highly effective in the treatment of mice infected intracerebrally with the virus of lymphogranuloma venereum.

In view of the information made available to us concerning the unusual therapeutic range of aureomycin, it seemed desirable to use this antibiotic in human beings suffering from lymphogranuloma venereum. An added incentive to the study was the realization that effective treatment has not been available for this disease. Although claims have been made for the efficacy of numerous compounds,³ including various sulfonamide drugs, antimony potassium tartrate, penicillin and stibophen ("fuadin"), it is generally agreed that only secondary infections are affected by the compounds in question, whereas the basic disease process due to the viral agent remains untouched.

Since a large percentage of the patients acutely afflicted with this virus disease become chronic sufferers of a progressive, fibrotic and destructive process, the need to provide specific therapy is apparent. Twenty-five cases of lymphogranuloma venereum were selected for this study and were divided into three groups: (1) buboes, (2) lymphogranulomatous proctitis, with or without ulceration, and (3) benign cicatricial rectal strictures.

Dr. Y. Subbarow gave us suggestions throughout the course of this study and supplied the aureomycin that was used.

From the Surgical Department of Harlem Hospital, Department of Hospitals, New York, and the Ophthalmological Department, College of Physicians and Surgeons, Columbia University, New York.

1. Duggar, B. M., and Hesselstine, C. W.: Personal communication to the authors.

2. Wong, S. C., and Cox, H.: Personal communication to the authors.

3. Wright, L. T.; Freeman, W. A., and Bolden, J. V.: Lymphogranulomatous Strictures of Rectum, Arch. Surg. 53: 499-544 (Nov.) 1946.

METHOD OF STUDY

Manner in Which the Cases Were Followed.—1. History: A detailed history was taken, with special emphasis on the initial appearance and progress of the local lesion.

2. Physical Examination: A complete physical examination was made which embraced (a) examination of local lesion by observation, palpation and mensuration, (b) proctoscopic examination in rectal cases wherever possible, (c) biopsies in all cases where possible and (d) aspiration of buboes with touch preparations, smears and cultures.

3. Laboratory Studies: The laboratory studies carried out were: (a) urinalyses, (b) hematologic studies—red blood cell count, white blood cell count, hemoglobin estimation and hematocrit determinations, (c) Kahn tests of the blood, (d) chemical studies of the blood—determinations of urea nitrogen, creatinine, glucose plasma proteins, albumin-globulin ratio, alkaline and acid phosphatase, (e) Frei tests, (f) complement fixation tests for lymphogranuloma venereum, (g) tests of hepatic function—icteric index, Van den Bergh, thymol turbidity and cephalin flocculation tests, (h) bone marrow smears, (i) serum levels of aureomycin before and after treatment, (j) bacteriologic cultures, (k) smears for inclusion bodies, (l) histologic examination of biopsy material and (m) barium enemas in cases of rectal stricture. For every patient a detailed history was taken and complete physical examinations were made. Examination of urine, red and white blood cell counts, hemoglobin estimation, Kahn test, Frei test and urea nitrogen, creatinine and glucose determinations were made in all cases. The other tests were done in a sufficient number of cases to give us adequate information as to possible harmful effects that the drug might have.

4. Drug Administration: Aureomycin, as furnished by the Lederle Laboratories, is a yellowish crystalline substance in sterile sealed vials containing 20 mg. A special diluent furnished with the drug was used in our early cases. In our later cases, the drug was dissolved in 2 cc. of isotonic sodium chloride solution. The intramuscular route of injection was used. Daily dosage in some cases was 10 mg., in some cases 20 mg. and in 1 case 40 mg.

CASES STUDIED

Buboes Due to Lymphogranuloma Venereum.—There were 8 patients in this group with buboes due to lymphogranuloma venereum, all of whom were Negro men. Their ages varied from 22 to 31 years. The specific lesions had been present in 7 cases two weeks to two months and in 1 case for two years. In 7 patients the bubo was the only pathologic observation, while 1 patient had associated proctitis with rectal bleeding. The nodes varied in size from that of a large pea to that of an egg and were unilateral in all instances. The nodes were removed in 5 cases, and the histologic observations were compatible with lymphogranuloma venereum. Aspiration biopsy for smears and cultures were bacteriologically sterile. Smears for inclusion bodies were made in all cases.

Reactions to Frei tests were positive in all patients with buboes. The reaction to the complement fixation test for lymphogranuloma venereum was 4 plus in a 1:40 dilution in 2 cases. (A butchers' strike at this time made it impossible to obtain sheep cells for the other cases.) The Kahn reaction was 2 plus in one instance and 4 plus in another. Six reactions to Kahn tests were negative. The results of urinalyses were normal throughout the study. Urea nitrogen, creatinine, sugar and plasma protein determinations remained within normal limits throughout the period of the study. Albumin-globulin ratios remained unchanged. In 5 of these cases, after treatment, the following tests of hepatic function were carried out: icteric index, Van den Bergh, thymol turbidity and cephaline flocculation tests. All observations were normal. The treatment for 7 of the patients in this group consisted of a single daily intramuscular injection of 20 mg. of aureomycin. In 2 of the cases the patients were given one injection of 20 mg. of aureomycin into the bubo along with the regular treatment.

RESULTS

All patients showed a reduction in the size of the gland after four days of treatment with aureomycin, an event which in our experience over twenty-four years with several hundred cases of early lymphogranuloma

venereum has never occurred spontaneously within so short a time. The patient that had rectal bleeding in addition to the bubo reported no further rectal bleeding after three days of treatment with aureomycin (table 1).

Effect of Aureomycin on Cellular Inclusions.—When properly coordinated with clinical and laboratory observations, the presence of cytoplasmic morphologic units consisting of inclusion, elementary and initial bodies may be considered pathognomonic of lymphogranuloma venereum. However, failure to demonstrate these bodies, which appear purplish red with Giemsa stain, does not preclude an active lymphogranulomatous process; for in some instances the demonstration of the inclusions may be somewhat fortuitous, depending on the stage of the infection and the portions of the lesions which are studied microscopically.

With these qualifications in mind, the following observations were made on touch preparations and smears. Smears for inclusion studies came from aspiration material, tissues of buboes and biopsy specimens taken from subacute or chronic infections in cases of rectal disease. Eleven cases were observed, and in each

TABLE 1.—Effect of Aureomycin on Eight Patients with Lymphogranulomatous Buboes

Case No.	Size of Bubo on Admission, Before Treatment, Cm.	Microscopic Observations* (Giemsa Stain) Before Treatment	Size of Bubo After Four Days' Treatment, Cm.	Microscopic Observations (Giemsa Stain) After Treatment of Bubo
1	4 by 7	.....	2 by 2	Aspiration bacteriologically sterile
2	5 by 3	Numerous elementary bodies with occasional initial bodies	1.5 by 3	48 hr.: occasional elementary and initial bodies; 1 week later: no inclusion or elementary bodies; aspiration bacteriologically sterile
3	2.5 by 4	.....	Not palpable	.....
4	1.5 by 1.5	.....	0.6 by 0.6	Aspiration bacteriologically sterile
5	3.5 by 2.5	As in case 2	2 by 2	As in case 2
6	3 by 0.5	.....	2 by 2	Aspiration bacteriologically sterile
7	5 by 5	As in case 2	4 by 4	As in case 2
8	7 by 5	.....	5 by 4	As in case 2

* In cases 1, 2, 4, 5 and 6 the remnants of the nodes were excised and studied histopathologically; the general pathologic appearance was compatible with lymphogranuloma venereum.

instance a series of specimens was taken. In the cases of bubo, preparations were made before, during and after treatment. Of eight Giemsa-stained preparations studied microscopically, three were seen to contain various morphologic units associated with this virus disease (table 1). The three specimens with positive reactions came from the eight buboes. In 1 instance (case 2) numerous elementary bodies, with an occasional initial body, were noted both in inclusion formation and lying free in the cytoplasm. In this specimen taken from the acute lesion the day of the patient's admission to the hospital, the elementary bodies appeared uniform and took the stain well. Within forty-eight hours after the beginning of treatment a specimen taken from the same bubo revealed only occasional elementary and initial bodies and both units appeared pleomorphic and stained poorly. A third specimen, taken from the same site a week after treatment had been started, contained no inclusion or elementary bodies. While this observation may not be independently significant, it is worthy of note, in view of the patient's rapid clinical improvement. In two other buboes (cases 5 and 7) the described experience was repeated with serial specimens.

Proctitis Due to Lymphogranuloma Venereum.—There were 3 cases of proctitis due to lymphogranuloma venereum in this group, 2 women and 1 man, whose

ages were, respectively, 22, 25 and 27 years. Presenting symptoms were rectal pain, discharge which had been present for three weeks, one year and two years, respectively. Two patients had rectal bleeding. All 3 patients had no associated lesion or other manifestation of this disease. Results of physical examination were essentially negative except for the local pathologic condition. Each patient showed profuse purulent foul-smelling rectal discharge with rectal tenderness on examination. In 1 case there was blood on the examining finger. Proctoscopic examination in all 3 cases revealed a granular mucosa with areas of yellowish exudate. In 1 case the granular area bled very easily. Biopsy in 2 cases showed tissue with acute inflammatory reactions.

either a reinfection or a recurrence. After a second period of treatment, with a total dose of 60 mg. of aureomycin, the discharge disappeared. An examination ten days later showed no recurrence.

Benign Lymphogranulomatous Rectal Stricture.—In this group 14 patients were studied, 13 women and 1 man. Five of these patients had previously had a colostomy for obstruction; 1 patient had a retrovaginal fistula. The ages of the women ranged from 28 years to 57 years, and the man was 27 years. All the cases had been studied previously, and biopsy showed the usual pathologic observations. The duration of the lesions varied from two years to twenty-six years, the average being nine and two-tenths years. There were no significant associated diseases in this group.

TABLE 2.—Effect of Aureomycin on Rectal Strictures Due to Lymphogranuloma Venereum

Case No.	Duration (Yr.)	Days on Service	Dosage		Rectal Pathologic Condition on Admission	Clinical Condition After Start of Treatment	Condition on Discharge
			Mg. per Day	No. Days			
12	16	37	10	21	Stricture did not admit finger tip; colostomy; pain and discharge from rectum	No rectal discharge or pain on eleventh day	Stricture admitted finger tip; no pain or discharge; smooth rectal mucosa
13	16	27	10	21	Stricture did not admit finger tip; pain and profuse discharge; perirectal tenderness; colostomy	No perirectal tenderness or discharge on eighth day	Slight rectal discharge; no perirectal pain; stricture unchanged
14	10	37	10	21	Stricture did not admit finger tip; rectal discharge	No rectal pain and defecation easy (first time in ten years) on eighth day	Stricture softer; admitted finger tip; diameter of stool double since treatment
15	26	50	20	50	Stricture did not admit finger tip; profuse rectal discharge; severe rectal pain	Pain and discharge slight on seventh day	No rectal pain or discharge; no change in size of stricture
16	2	44	20	28	Stricture did not admit finger tip; stricture interrupted by recto-vaginal fistula 2 cm. diameter	By the sixteenth day there had been no gas or feces per vaginam for 48 hr.	Rectal and vaginal observations unchanged; no gas or feces per vaginam as on admission.
17	3	32	20	31	Stricture did not admit finger tip; decided decrease in stool diameter, 1 to 1.5 cm.	Stool diameter increased, subjectively improved on twelfth day	Diameter of stool double since treatment
18	7	13	20	5	Stricture did not admit finger tip; decrease in diameter of stool	No change in stricture on fourth day	Diameter of stool increased; no changes in rectal observations
19	4	31	20	31	Stricture did not admit finger tip; bleeding and pain; discharge	No rectal bleeding on the fourth day	Diameter of stool doubled since treatment; no rectal bleeding or pain
20	2	25	20	23	Stricture did not admit finger tip; profuse purulent discharge from rectum; rectal pain; colostomy	Rectal discharge reduced at least 50 per cent by the second day	Stricture unchanged; no rectal bleeding or pain; no discharge
21	2	16	20	16	Stricture admitted index finger; band 0.5 cm. wide in stricture; pain and bleeding on defecation	Diameter of stool greatly enlarged by the seventh day	Stricture not present; no rectal pain or bleeding
22	10	30	20	16	Stricture did not admit finger tip; rectal discharge; diameter of stool diminished	Diameter of stool doubled by the sixteenth day	No change in stricture; no rectal discharge or pain; stools doubled in diameter
23*	6	11	20	10	Stricture admitted finger tip; colostomy; profuse purulent discharge	.....	No change in stricture; only slight rectal discharge
24	10	12	20	11	Stricture did not admit finger tip; decrease in size of stool	Fifth day drug administration: increased size of stool by fifth day	Stricture unchanged; stools doubled in diameter
25	10	14	20	12	Stricture did not admit finger tip; decrease in diameter of stool	Moderate increase in stool diameter by sixth day	No change in rectal stricture; stool diameter doubled

* The patient went home against advice after nine days of treatment.

Reaction to Frei tests were positive in all cases of lymphogranuloma proctitis. Complement fixation tests for lymphogranuloma venereum were 4 plus in dilution of 1:40 in 2 cases. In the third case this test was not done, because of a shortage of sheep cells. Results in all other laboratory studies were observed to be within normal limits throughout the study.

Two patients had eosinophilia; in 1 patient there were 7 per cent and in the other patient 4 per cent eosinophils after treatment. Two patients had leukocytosis which disappeared while the patients were under treatment. Each of these patients was given a daily intramuscular injection of 20 mg. of aureomycin. The total doses given were 80 mg., 200 and 220 mg.

Clinically these patients showed decided improvement. In 2 cases, after four days of treatment, tenderness and discharge disappeared; in the third case, rectal bleeding disappeared after the eighth day of treatment. Proctoscopic examinations at the end of treatment in the 3 cases revealed no abnormalities of the rectal mucosa. One patient, readmitted seventeen days later, complained of rectal discharge, which was considered

History on admission showed that 5 patients complained of rectal pain, 2 had rectal bleeding and 7 had rectal discharge. Four patients who did not have a colostomy stated that the diameter of the stool was decreased. One patient complained of passage of gas and feces *per vaginam*.

Physical examination on transfer to this service for study showed, on rectal examination, 5 cases with rectal tenderness, 7 cases with rectal discharge and 2 with blood on the examining finger. The strictures were so advanced, that with the exception of 2 cases, not even the tip of the finger could be admitted into the rectum at the time of admission.

All patients studied had negative Kahn reactions and positive reactions to Frei tests. The result of the complement fixation test for lymphogranuloma venereum in 10 cases was 4 plus in 1:40 dilution, and in 1 case it was 3 plus in 1:5 dilution. Three patients were not tested.

The patients in this group received daily intramuscular injections of aureomycin in amounts of 10 or 20 mg.. The total dose ranged from 160 mg. to 1.0 Gm.

Clinical Course.—As may be noted from table 2, in this group with chronic infections of long duration, the response to antibiotic therapy was gratifying. On the second day of treatment, 1 patient reported considerable decrease in the rectal discharge, while another showed complete cessation of rectal discharge and bleeding by the fourth day of treatment. Five patients showed increase in diameter of stools on the fifth, sixth, seventh, twelfth and fifteenth days of treatment, respectively. Four patients reported decrease in rectal pain and discharge on the seventh, eighth and eleventh days of treatment, respectively. The patient with the rectovaginal fistula had no further passage of feces or gas *per vaginam* after the sixteenth day of treatment.

Examination during and at the end of treatment in 11 cases showed no change in the rectal stricture. One patient that had previously exhibited a small 0.5 cm. band showed no evidence of the band following treatment. Two strictures had become softer and admitted the tip of the examining finger.

Six patients showed stools twice their previous diameter, and 2 patients showed a slight increase in the diameter of stools.

Two patients with rectal bleeding had no bleeding at the end of treatment. Six patients with rectal discharge had no discharge at the end of treatment, and there was decided reduction in 2 cases.

In the 6 patients with rectal pain, all rectal tenderness had disappeared while they were under treatment.

The Anemic Factor.—Since the present study constitutes the first use* of aureomycin in human beings, every effort was made to follow the various body systems in each person under treatment. Within a short time after the investigation had been started, anemia was noted in patients receiving aureomycin. Further study revealed the following facts.

In the early cases, the antibiotic was dissolved in a special diluent designed to maintain a low pH , which was considered desirable. Anemia developed in all patients who received injections with this material (table 3). However, when the special diluent was replaced by isotonic sodium chloride solution the anemia either did not occur at all or, if present, was much less apparent and made its appearance more slowly than formerly. In all instances, even with the use of the special diluent, when a folic acid-iron compound ("folvron") was administered simultaneously with the aureomycin, no anemia was noted.⁵

A critical hematologic evaluation of the anemia made it clear that we were dealing with a simple hypochromic condition of the peripheral blood. That the hemopoietic system was not injured was apparent from the results of bone marrow studies and from the course of the anemia. It should also be noted that blood chemical values were normal in all cases; tests of hepatic function (made in 13 cases) revealed no abnormalities. The urine was consistently normal in all cases throughout the study. Results of tests of renal function (3 cases) were normal. Hematocrit values (20 cases) were normal. The only positive observation was eosinophilia in 18 cases, with the level of eosinophils ranging from 4 to 19 per cent during treatment.

In general, it may be said of aureomycin suspended in isotonic sodium chloride solution that the anemic factor, when it functioned, produced mild easily rectified

hypochromia of the peripheral blood. In the absence of apparent toxic effects on any other body system and in the presence of the potent antibiotic activity of aureomycin, the anemia was considered sufficiently minor to warrant continued use of the substance under investigation.

Aureomycin Blood Levels.—Since the schedule of treatment in this report consisted of very small amounts of aureomycin in proportion to body weight, i. e., 10 or 20 mg. daily in adults weighing 50 to 70 Kg., it was of interest to determine (a) whether any of the antibiotic was in the blood stream and (b) if present in circulating blood, how long the antibiotic remained there.

TABLE 3.—Effect of Aureomycin on Peripheral Blood

Patient	Aureomycin Dissolved In		Folic Acid-Iron Compound Given		Red Blood Cell and Hemoglobin Values		
	Special Diluent	0.85% NaCl	Same Time as Aureomycin	After Aureomycin Therapy Was Stopped	At Start of Aureomycin Therapy	Interval Values (Days After Aureomycin Therapy Started)	At Time of Discharge from Hospital
12	X	..	..	X	4,120,000 85%	2,650,000 (21 days) 76%	3,390,000 76%
13	X	..	..	X	4,130,000 90%	2,500,000 55% 21 days	4,300,000 69%
14	X	..	..	X	4,400,000 92%	3,150,000 59% 21 days	4,750,000 67%
15	X	..	X	..	3,450,000 72%	4,240,000 63% 21 days	4,300,000 63%
16	X	..	X	..	3,050,000 84%	4,750,000 90% 21 days	4,300,000 78%
17	X	..	X	..	3,910,000 76%	4,600,000 90% 21 days	5,030,000 85%
18*	X	..	X	..	3,910,000 77%	.....	3,350,000 81%
19	..	X	X	..	3,650,000 72%	4,600,000 89% 20 days	4,430,000 72%
20	X	..	X	..	5,150,000 90%	4,600,000 84% 7 days	4,600,000 81%
21	X	..	X	..	3,950,000 65%	3,740,000 65% 7 days	3,750,000 68%
22	X	..	X	..	4,350,000 78%	4,500,000 88% 9 days	4,570,000 77%
23	..	X†	..	..	4,600,000 90%	4,450,000 84% 6 days	4,350,000 87%
24	..	X†	..	..	4,100,000 76%	.....	4,070,000 71%
25	..	X†	..	..	3,400,000 72%	4,350,000 82% 2 days	3,980,000 81%

* Discharged eight days after the start of aureomycin therapy.

† No folic acid-iron compound given at any time.

The technic for estimating the presence of aureomycin in the circulating blood is similar to the inhibition tests used with streptomycin. Details of this test will be published elsewhere.

For present purposes it will be sufficient to describe the manner in which blood samples were collected and to state the results of the blood analyses which were carried out at the Lederle Laboratories.

In accordance with instructions, all blood samples were drawn in amounts of about 15 cc. into rubber-stoppered sterile test tubes. As soon as possible, each tube was quickly frozen by immersion into a mixture of equal parts of methyl alcohol and acetone which contained solid carbon dioxide. The frozen blood was then stored in a refrigerator (solid carbon dioxide) until tested.

In this manner, blood was collected from 7 patients (cases 17, 22, 23, 5, 6, 7 and 10) receiving 20 mg. of aureomycin once daily. In the case of 3 patients, blood was taken at two, six and ten hour intervals after

4. This paper was submitted for publication on May 4, 1948.

5. Since this study was presented for publication, numerous patients suffering with lymphogranuloma venereum and other diseases have been treated with aureomycin. It can now be definitely stated that the anemic factor seen in this first study represented an effect due to the special diluent and not to the antibiotic.

injection of aureomycin. In the remaining 4 cases, the blood samples were drawn just before injection of the antibiotic and two, six and ten hours thereafter.

The blood values representing circulating aureomycin in specimens described were not considered significant.⁶ It is to be noted that the present schedule of treatment represented the first tentative approach to therapy; consequently, very small amounts of aureomycin were used and the amount of circulating antibiotic in the blood was not accurately demonstrable by present methods of assay.

SUMMARY

A preliminary study of 25 patients with lymphogranuloma venereum treated with aureomycin, a new antibiotic, is reported. Eight patients with buboes were treated and showed a decided reduction in size of the node at the end of four days of treatment. In 3 instances, on admission of the patients, smears from aspiration of the bubo revealed inclusion and elementary bodies which appeared uniform and took the stain well. Within forty-eight hours after the start of treatment, specimens from the same buboes revealed only occasional elementary and inclusion bodies and both units appeared pleomorphic and stained poorly. One

6. Dornbush, A.: Personal communication to the authors.

week after treatment, no elementary or inclusion bodies were seen.

Three patients with proctitis were treated and showed decided improvement, in 2 instances after four days and in the third case after eight days. Proctoscopic examination at the end of treatment showed normal rectal mucosa. Fourteen patients with benign rectal stricture due to lymphogranuloma venereum were studied and showed a decided change in the fibrous rectal stricture, although there was decided decrease in rectal pain, discharge and bleeding. There was an increase in the diameter of the stool.

CONCLUSION

On the basis of our past experience, we believe that in 25 cases of lymphogranuloma at this hospital there were multiple strains of the virus. There is, therefore, the possibility that the effective antibiotic activity of aureomycin is not limited to a single strain.

Aureomycin, a new antibiotic, with apparent virucidal properties, has been used in human beings for the first time. The clinical results in the three types of lymphogranuloma venereum discussed in this paper showed such results as to warrant further extensive research and clinical trial of the antibiotic.

GENERAL PRACTITIONERS SESSION

CARCINOMA OF THE PROSTATE GLAND

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Carcinoma of the prostate gland is an insidious and deadly disease of slowly increasing frequency. While there were only 83 cases discussed in the literature up to 1899, by 1935 Rich had observed the condition in 14 per cent of autopsies on men, and Moore expressed the belief that he could recognize it in 21 per cent of men past 40. By 1941 Baron and Angrist had claimed that they had observed occult forms in 46 per cent of 50 men past 50 years of age in consecutive autopsies. Using these figures, and assuming that there are 17,000,000 men past 50 in the United States, Hinman has estimated that there must be between 3,000,000 and 8,000,000 cases in this country at any one time. Carcinoma of the prostate gland is listed as the cause of 15,000 to 20,000 deaths in the United States each year (Jewett). To it Huggins attributed 5 per cent of all deaths in men past 50.

This evident increase results from several causes, the principal one being increasing longevity. Life expectancy at birth among the industrial policyholders of the Metropolitan Life Insurance Company rose from 46.6 years in 1911 to almost 67 in 1947. The net result is that two or three times as many men live past the age of 65 as in 1911; this is sufficient to account for the growing numbers of patients who are seen with prostatic cancer. Add to this the fact that education has improved both the physician's ability to recognize the disease and the patient's willingness to consult the physician, and it is unnecessary to postulate a heightened individual susceptibility to cancer.

There is still room for improvement in diagnostic accuracy, because most carcinomas of the prostate gland are discovered only after they have extended

locally or metastasized, that is, too late for cure. Thus, Barringer observed that in only 4.5 per cent of 351 cases was the condition localized within the gland at the time of diagnosis, and Young regarded only 3.4 per cent of 1,000 cases as suitable for curative operation.

Late recognition of the disease is due to an unfortunate combination of circumstances. Moore stated that three fourths of prostatic carcinomas arise in the posterior lamella of the gland. Hinman expressed the belief that a smaller percentage arise there but that most of them do begin in the periphery of the gland. In either case, the majority start at a distance from the urethral lumen and grow slowly, so that the first symptom, usually that of obstruction to urination, appears late in the course of the disorder. Unluckily, these symptoms are identical with those of benign hypertrophy, which most elderly men regard as normal accompaniments of aging. All these facts conspire to send the patient to the physician after local extension or metastasis has occurred. Moreover, early or small cancers may be surrounded or covered by layers of benign hypertrophy and so escape detection. Thus, urologists are confronted by the hard fact that at least 95 per cent of patients have inoperable or unrecognizable lesions, as far as cure is concerned, when they are first seen. While this can be remedied to a considerable extent by making rectal examination part of every routine physical examination (as it should be for other reasons), it has led most urologists to take a dim view of attempts to cure carcinoma of the prostate gland. Thus, both the profession in general and the urologist need more education, if they are to discharge their obligations to these patients.

Since, in existing circumstances, most patients require palliative treatment and since this is bound up with endocrine relationships, these will be reviewed.

It has been firmly established that normal development and maintenance of the prostate require male sex hormone from normal testes, which elaborate it under

the influence of gonadotropins secreted by the anterior lobe of the hypophysis. Castration causes simple atrophy of the normal (not the hypertrophied) prostate and hyperplasia and increased secretory activity of the anterior pituitary. Linked with the endocrine control of the prostate are the phosphatases, enzymes which split phosphoric acid from its esters and which are important in the formation and destruction of bone. The alkaline phosphatases are concerned with many diseases of bone, but the acid phosphatases, while occurring in organs other than the prostate, are of clinical importance only in carcinoma of the prostate. The mature normal prostate has a higher concentration of acid phosphatase than any other organ in the body (Kutscher and Wolbergs). It is elaborated by the acinar epithelium (Gomori) and is abundant in its secretion (Dmochowski). It is present in high concentration in most carcinomas of the prostate and in their metastases (Gutmans and Spröul) and is present in increased concentration in the blood serum of 85 per cent of patients with carcinoma of the prostate which has metastasized to bone (Gutman, Barringer and Woodard, Huggins).

Contemplation of these facts apparently led Huggins in 1939 and 1940 to castrate 20 men with prostatic cancer which had metastasized to bone, on the assumption that, since the normal and the cancerous prostatic cell behave alike with respect to the formation of phosphatase, they might respond alike to castration. Seventy per cent responded favorably, with relief of pain, gain in weight, regression in the local and metastatic lesions and a fall in the acid phosphatase level of the serum. Similar effects followed use of estrogens without castration, and prompt relapse followed administration of male hormone. Spontaneous relapse occurred in most patients after relief varying from a few months to several years and was thought to result from stimulation, by the hyperactive "castrate" anterior pituitary, of the adrenals, which formed androgenic substances. This has not been proved.

Huggins' brilliant study is the basis for most of the effective palliative therapy now in use.

DIAGNOSIS

The history is not helpful unless metastasis to the pelvic bones or local extension of the tumor into pelvic nerve trunks has produced a troublesome sacral backache or pain simulating sciatica. The usual presenting complaint is difficult urination, with nocturia.

The diagnosis depends primarily on recognizing stony induration. At first there is a discrete slightly mobile nodule. Later the whole gland is hard, nodular and fixed by periprostatic extension.

Prostatic tuberculosis may simulate carcinoma, but is ordinarily differentiated by the younger age of the patient, by the story of vesical irritation and urgency without obstruction and by the presence in the urine of pus and tubercle bacilli, with a sterile culture.

The prostatic calculi which do not produce the characteristic crepitus, and which may coexist with carcinoma, are identified by roentgenogram, which will also show metastases to the pelvis when present. Early, there are isolated circumscribed areas of increased density, in which the bony trabeculae are lost; later, these small metastases may coalesce to involve large areas or even whole bones (osteoblastic metastases). In exceptional instances small patches of bone simply disappear (osteoclastic metastases). Confusion is likely to arise chiefly with Paget's disease, in which the

trabeculae are increased in size and density, although there may be a patchy appearance that makes differentiation difficult.

It is here that phosphatase determinations are most helpful. In 85 per cent of metastases to bone from prostatic carcinoma the acid phosphatase will be elevated. Huggins regarded a level between 4 and 10 units (King-Armstrong) as suggestive and levels above 10 units as diagnostic. The alkaline phosphatase is also elevated in metastases from the prostate, but in Paget's disease only the alkaline phosphatase is above the normal level of 12.5 units.

Estrogens may be given to clarify the diagnosis. They are useful when observations based on palpation are inconclusive, particularly if local fixation is present and the phosphatase levels are normal; if the roentgenogram shows lesions of uncertain character or even if the prostatic lesion is obviously localized but the patient is a poor surgical risk, one may then give an estrogen in adequate doses for six to eight weeks, at which time definite regression of the local lesion confirms the diagnosis. If it remains stationary or progresses, it may be noncancerous in the first instance or refractory to estrogens in the second. A metastasis to bone which was only suggestive in appearance originally may, after six to eight weeks of treatment, appear larger, denser and more sharply margined, even if it is destined to disappear later. Failure to change indicates either its nonmalignant character or refractoriness to estrogens.

When the suspected prostatic lesion is discrete and slightly mobile, when there is no evidence of metastasis and when the patient is in good condition, the question of radical perineal prostatectomy arises. Biopsy by aspiration or with the Silverman needle or some punch, such as that of Lowsley, has many advocates but, while adequate in larger lesions, has proved inadequate in my hands because of the difficulty in securing tissue from a small area. My own preference is for perineal exposure of the prostate. If the suspected area is not typical of carcinoma on direct inspection and palpation, it can be excised with surgical diathermy for fast frozen section; if it is typical or if results of biopsy are positive, one should proceed at once with radical removal of the gland.

In some instances Colston has observed that a localized nodule of carcinoma which is adherent to adjacent tissues will regress sufficiently with treatment with estrogens to permit successful radical removal.

While radical perineal prostatectomy is the only method which has yielded bona fide cures in prostatic cancer (56 per cent of five year symptom free survivals by Young and by Colston), many objections to it can be cited, although one does not encounter them in connection with other visceral cancers. The low rate of operability can be improved by a concerted effort. Colston has reported an operability rate of 20 per cent in recent years; Jewett has reported a mortality rate of 3 per cent in patients under 70, and a rate of 10 per cent for men over 70 still compares favorably with that for resections of the stomach or large intestine in similar circumstances. While Kahler has claimed that perineural infiltration outside the prostate is almost always demonstrable, even with small lesions, both Hinman and Young have reported cures as long as seventeen years after operation, which seems to nullify Kahler's claim. The risk of urinary incontinence is not inconsiderable, but can often be corrected; when

the stakes are considered, it does not seem a valid contraindication to the operation. To repeat, it is the only method which has cured any patients.

It should be mentioned that neither the suprapubic nor the retropubic approach gives as good exposure as does the perineal, particularly at the apex of the prostate and the bases of the seminal vesicles.

PALLIATIVE TREATMENT

The employment of palliative measures presupposes that the local lesion has extended or metastasized, that the patient's general condition prevents operation or that stiff hips make the perineal exposure impossible.

Nesbit, Herger and Sauer and others have pointed out that the good effects of endocrine therapy will last only for a limited period (varying from a few months to several years) in the individual patient. This makes it desirable to withhold such treatment until the appearance of pain, for which it is most useful. Its use as a diagnostic measure or in an attempt to make an inoperable lesion operable constitutes a valid exception. For the same reason, it may be preferable to administer estrogens intermittently rather than continuously, stopping the use of them after the symptoms are controlled and restarting when careful follow-up gives evidence of relapse.

Therefore, a patient who has an inoperable carcinoma with few or no symptoms should merely be kept under observation until treatment is demanded by the symptoms and not merely by the knowledge that a cancer is present.

Troublesome obstruction to urination is easily corrected by transurethral resection.

Pain from local extension or metastasis is best treated with endocrine methods. There is no conclusive evidence that castration is superior to estrogens, and I prefer to reserve it for uncooperative or forgetful patients, for those whose severe pain demands prompt relief and for those in whom estrogens are or have become ineffective or impossible to use because of side effects. Huggins, on the other hand, expressed preference for castration, on the grounds that estrogens are less effective, cause soreness in the breasts in many patients and are known to be capable of carcinogenesis. He used the estrogens to combat the hot flashes which follow castration, when operation is refused, as a diagnostic measure and for relapse after castration.

Many estrogens can be used, but diethylstilbestrol and ethinyl estradiol ("estiny") are usually preferred, because of their known potency and because of their effectiveness when given orally. Both may produce tender enlargements of the breasts, nausea, cutaneous eruptions, hemorrhagic diatheses and mental disturbances, although the incidence of troublesome reactions is low. Diethylstilbestrol is said to cause them more often than does ethinyl estradiol. The dosage recommended varies, in the case of diethylstilbestrol, from 0.5 to 40 and for ethinyl estradiol from 0.15 to 2.5 mg. per day. Either preparation is best given in a single dose at bedtime, in the hope that any nausea will occur at night and will be too mild to awaken the patient. I prefer 5 mg. of diethylstilbestrol daily until symptoms are controlled, followed by a gradual downward revision until a maintenance level is found, after which the treatment is interrupted periodically.

Failure or relapse is treated with doses up to 20 mg. or more daily; if these fail, castration is used. Although prospects of success from castration after the use of

estrogens are none too good, an occasional patient will experience striking relief.

The patient who is intolerant of diethylstilbestrol is given a trial of ethinyl estradiol; if this produces side effects, one may implant 40 mg. of alpha estradiol in pellet form subcutaneously at intervals of six to twelve weeks, as recommended by Kearns, before resorting to castration.

Some writers favor various combinations of castration and estrogens, but evidence that this is superior to either one alone is not available.

If pain becomes severe despite these methods or combinations of them, one should not forget the occasional usefulness of roentgen therapy, the subarachnoid injection of alcohol and cordotomy.

Treatment of relapses by irradiation of the pituitary and adrenals, and even by adrenalectomy, has not been successful (Herger and Sauer, Huggins).

RESULTS

Results of palliative therapy are extraordinarily difficult to evaluate concisely, because the best criterion is prolongation of comfortable life, and this is difficult to tabulate. Moreover, no one has yet had time to accumulate any sizeable series of cases followed up for a minimum of five years. In the meantime one can secure some useful information from the death rate of series of patients with and without endocrine therapy for shorter periods.

As a control Nesbit followed up 783 patients treated before 1940 and found that 69.4 per cent had died by the end of the second year after diagnosis. Similar data have been secured from the literature on 569 patients treated by castration, estrogens or both by Vest and Frazier, Greene and Emmett, Nesbit, Herger and Sauer and Huggins. Thirty per cent of these patients had died by the end of the second year, that is, about half the patients who might have died without endocrine therapy were still living. More conclusive data will have to await the passage of time, but Hinman, while recognizing the contribution that the estrogens make to the patient's comfort, expressed doubt that there would be any great net prolongation of life. On the other hand, 5 of Huggins' original 20 patients were living six and one-half to eight years after castration. The series is too small to exclude chance variations, especially since Chwalla observed 2 patients who lived eight and nine years, respectively, after permanent suprapubic cystostomy for prostatic cancer.

Nevertheless, endocrine therapy is affording to many unfortunate old men periods of normal life which simply would not be available without it. Perhaps the most encouraging feature of the whole thing is the prospect that, in the not too distant future, chemical cure of this and other cancers may become a reality.

SUMMARY AND CONCLUSIONS

Carcinoma of the prostate gland has been increasing steadily in frequency during recent years because of increasing longevity with aging of the population.

Prognosis is poor because slow growth leads to late recognition of the disease.

When recognized early, carcinoma of the prostate may be cured in about half the cases.

The chances of cure can be increased only by educating both the patient and the physician.

Palliation by means of endocrine therapy contributes to the comfort of the majority of patients with inoperable lesions.

SPECIAL ARTICLE

CANCER OF KIDNEYS, ADRENALS AND TESTES

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NEW YORK

(Continued from page 362 in *The Journal*, October 2)

CANCER OF THE ADRENAL GLAND

The adrenal gland is actually two glands fused together in development. In the human being these are known as the cortex and the medulla. Each has an essentially different origin, a different type of tissue and a separate function, but they happen to be enclosed in one enveloping capsule and tissue stroma.

Tumors of the adrenal gland are not frequent. When they arise they can be basically classified as follows:

1. Tumors derived from the various layers of connective tissue, blood vessels, lymphatics or nerve structures within the gland are of a type that may occur in any gland. They occur rarely in the adrenal. Tumors of these tissues which have been reported as occurring in the adrenal gland are as follows: fibroma, lipoma, neuroma, neurofibroma, myoma, osteoma, hemangioma, sarcoma, lymphangioma and melanoma.

2. Tumors derived from the medulla are peculiar to that tissue and are of the ectodermal sympathetic nervous system. They may be (1) of the basic nerve cell, a sympathicoblastoma, (2) from the sympathetic ganglion, or a ganglioneuroma, or (3) from the pheochromocytes, a pheochromocytoma or a paraganglioma.

3. Tumors originating from the adrenal cortex are mesodermal glandular tumors and cytologically are hyperplasias, adenomas and carcinomas.

FASCIAL TUMORS OF THE ADRENAL GLAND

Tumors arising from the various layers of connective tissue, the blood vessels, lymphatics and nerve structures of the adrenal gland are extremely rare.

The benign tumors, such as fibroma, lipoma, neuroma, neurofibroma, myoma, osteoma and hemangioma, are usually without symptoms unless they become large enough to cause distress from their size. Often they are discovered by accident in examination, an asymptomatic retroperitoneal mass being found in either flank and the diagnosis being made only on operative removal or at autopsy. When the cancers such as sarcoma, lymphosarcoma or melanoma occur the symptoms are those seen with retroperitoneal cancers, some loss of weight, strength and appetite, a gradual anemia and, depending on the extension of the tumor, epigastric or flank distress. As a rule, studies rule out evidence of changes in the gastro-intestinal tract and in other organs and often an indefinite retroperitoneal mass is discernible by roentgen ray or by abdominal palpation. By surgical exploration and biopsy the diagnosis has been established. Usually surgical removal of these infiltrating tumors has been impossible. High voltage roentgen therapy may benefit in those tumors radiosensitive, as certain of the lymphosarcomas. As yet

the effect of the newer therapeutic agents on these rare tumors is unknown. The course in most of these tumors is extension and death. Fortunately they are extremely rare.

TUMORS OF THE ADRENAL MEDULLA

When tumors arise from the adrenal medulla they may be divided clinically into those which do not produce hormones and those which do.

The medulla of the adrenal gland is of the sympathetic nerve system. The primitive nerve cells, the sympathogonia, grow into the hollow of the adrenal cortex so that the cortex extends over and encloses the medulla. The sympathogonia forms two types of cells, one the fibril ganglion cell and the other the secreting endocrine cell.

Sympathoblast Sympathetic ganglion cell	Sympathogonia	Pheochromoblast Pheochromocyte (secreting endocrine cell)
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Similar ganglion tissue occurs in the retroperitoneal tissues, as the sympathetic ganglions along the aorta and vessels, Zuckerkandl's body, the sacrococcygeal body and the carotid body. Tumors occur in these situations similar to those in the adrenal medulla and may be nonhormonal ganglion cell tumors or hormonal pheochromocytoma cell tumors. The latter have not been reported in the carotid body.

NONHORMONAL TUMORS OF THE ADRENAL MEDULLA

Tumors of the ganglion cell are nonhormonal and occur most often as the extremely malignant immature sympathicoblastomas or less often as the relatively benign neurocytomas of adults.

The immature cell tumors, sympathicoblastomas, occur more frequently in infancy and childhood and the malignancy rates in seriousness with that of the embryomas of Wilms. They occur in either sex, in either adrenal gland or in any of the retroperitoneal sympathetic ganglions. They are seen most often in the first or second years of life and become less frequent as age progresses.

There are usually no symptoms of their presence until profound constitutional changes occur, such as loss of appetite and weakness and anemia, or a tumor mass is accidentally discovered in an enlarging abdomen. There may be loss of weight, but this may be offset by the growth of the tumor mass. At other times it is the presence of metastases that attracts attention to the condition. Long ago, Hutchinson⁶ called attention to the metastases occurring in the orbit and skull or in the left side of the neck from an original tumor which was later found in the left adrenal gland. Similarly, Pepper⁷ reported also finding in infants a tumor of the thorax and the liver occurring secondary to a cancer in the right adrenal gland. In both of these types of tumors, the origin and the cells are the same, adrenal medullary sympathicoblastomas, but the tumors in the right and left glands have different routes of metastases. Most of these cases were unrecognized until metastases had occurred, and this tumor probably in this stage has a complete mortality.

Occasionally such sympathicoblastomas may be recognized before metastases are present. Only by

6. Hutchinson, J.: Left Adrenal Metastasis, *Quart. J. Med.* 1:33, 1907.
7. Pepper: *Am. J. M. Sc.* 121:287, 1901.

careful examination of the abdomen, a mass may be found in such infants with a minimum of symptoms. In such, an increase in size of the abdomen may be noticed by the mother before the mass is detected. When found, it usually is in one of the flanks or



Fig. 5 (R.V.).—A retrograde bilateral pyelogram in an infant girl with a sympathicoblastoma of the left adrenal gland. The tumor mass has pushed the left kidney outward and downward and partially rotated the kidney. The kidney was not involved in the cancer.

sides, and resembles often that seen in Wilms' tumor. It is attached to the posterior part of the peritoneum, usually is soft but may occasionally be hard, projects anteriorly and may be covered by the stomach or intestines. It is without pain or tenderness and may or may not move with inspiration. Excessive handling of the mass is considered to be not without danger of disseminating metastases. When any such mass is present, determination of the origin of the mass is imperative. For this, intravenous or subcutaneous secretory pyelograms have been of great value. Because of the size and age of the infants, secretory pyelograms are, if possible, preferred to retrograde cystoscopy. The diagnosis often is between a renal and an adrenal mass. In the adrenal tumor the films usually show a normal secreting and normal anatomic kidney on that side, often pushed down by the mass above. If so, the greatest odds are that a sympathicoblastoma is present. In a Wilms' tumor of the kidney there is usually diminished secretion on that side due to replacement of renal tissue by tumor growth. There is also distortion and displacement of the renal calyces and of the pelvis by the renal tumor mass. In other words, the adrenal tumor is without the kidney and Wilms' tumor is within. In some cases it may be necessary to do retrograde pyelograms to make a differentiation from a nonsecreting hydronephrosis, or congenital cystic kidney. In some cases, because sympathicoblastomas occasionally invade the kidney, a differential diagnosis is impossible without microscopic section, especially with the retroperitoneal sympathicoblastoma and extrarenal embryoma of Wilms. Surgically it is unnecessary, because the two types require identical therapy. Delineation of these types

of large tumors by perirenal insufflation of air has been found unnecessary, may be dangerous and may make removal more difficult.

There are fewer cancers that have a poorer prognosis than the sympathicoblastomas of infancy, mostly because of failure to recognize the disease while the tumors are small and before metastases.

Avoidance of trauma to the tumor and early removal before metastases offer the only correction. Sympathicoblastomas are considered to be among the radioresistant tumors. Wide transverse transperitoneal approach through the upper part of the abdomen is the method of choice. Since most of these tumors grow anteriorly into the abdomen, opening of the retroperitoneal tissue, ligation of all contributing vessels around the tumor and then removal of the tumor are the accepted steps of the procedure. At times the growths may be closely attached to the cava or aorta, but should be removed in spite of attachments and removed intact because, as stated before, in complete removal before metastases lies the sole possibility of relief.

More rarely than the tumors of infancy, similar tumors of more adult cells occur in older age groups, in both children and adults. They occur in the same places, adrenal medulla, retroperitoneal ganglions, Zuckerkandl's, and the coccygeal body, and also in the carotid. Their malignancy is according to the differentiation and activity of the cells. The usual neurocytoma is much more differentiated than the



Fig. 6 (S.F.).—A retrograde pyelogram in a child with a right sympathicoblastoma of the adrenal gland. This shows the large mass above the right kidney pushing the kidney down and rotating it. The kidney was not involved.

sympathicoblastoma and is much less malignant; in fact some of the adult neurocytomas may be considered benign.

Usually they are symptomless; occasionally they may cause pain because of pressure due to their size. Often they are discovered accidentally on physical examination. When found, they present a rounded moderate soft smooth mass arising from either flank or from the retroperitoneal tissues of the abdomen. They frequently are movable, attached pos-

teriorly and not tender. Metastatic dissemination is uncommon. For diagnostic purposes, intravenous pyelograms may show no change in renal anatomy or physiology except displacement downward by the tumor. Perirenal insufflation of air may show that they arise from the adrenal fascia area but will not differentiate from any other asymptomatic tumor of the adrenal gland. At times, because of their situation, they cannot be told from asymptomatic tumors of the pancreas or from the various fascial tumors of the area, such as leiomyosarcoma or lymphosarcoma.

The therapy of neurocytoma is surgical removal. This is best by the transverse transperitoneal route through the upper part of the abdomen. Removal may be difficult due to size but usually is not, because they are definitely encapsulated, with no close attachments to organs, and have not the expanded multiple circulatory systems seen with the more malignant carcinomas. Often after complete removal of the tumor there is no recurrence, because of rarity of metastasis.

Cytologically these tumors are graded according to the age of the sympathetic cells and their activity. In extremely young infants the large soft rapidly growing tumor shows sheets of undifferentiated sympathogonia cells with bizarre shapes and many mitoses and with cell disorder. Necrosis in these tumors is frequent. The older more differentiated tumors uniformly show more cells approaching the adult fibril ganglion cell and with more orderly arrangement of the cells and rare mitotic division.

HORMONAL TUMORS OF THE ADRENAL MEDULLA

Tumors of the hormonal pheochromocytoma cells of the adrenal gland are rare but because of interest in the phenomena they are more often diagnosed and reported, and they appear to be more frequent than formerly suspected. The typical syndrome when first described by Labbe and Tinel Doumer⁸ was called "paroxysmal hypertension."

The pheochromocytomas are tumors of the secreting endocrine cell of the sympathetic system. They occur in the adrenal medulla most frequently, but also occur in other pheochromocytoma tissue such as the retroperitoneal ganglions, sacrococcygeal body and intrathoracic ganglions. They may be multiple in several ganglions; usually two only have been reported as occurring at a time. The multiplicity has been estimated as to occur in 10 per cent of the cases. MacKeith⁹ stated that 9.7 per cent were bilateral and 9 per cent were cancerous.

The secretion from the cells of these tumors causing the syndrome is considered to be an excess production and use of the pressor substance, epinephrine. The symptoms and changes in the metabolism and vascular system are the result of the intermittent or continuous secretion of epinephrine. It has been shown to be in excess during an attack, directly, by Beer, King and Prinzmetal,¹⁰ and, indirectly, by Goldenberg, Snyder and Aranow.¹¹

When the tumor occurs the usual symptom com-

plex is seen, which has previously been described as paroxysmal hypertension. This effect has been accepted as a temporary release of an excessive amount of pressor substance into the blood. The reaction of the patient is to this excessive amount of pressor substance. More recently it has been shown by Palmer and Castleman,¹² by Howard and



Fig. 7 (J.L.).—Air insufflation roentgenogram in a case of pheochromocytoma of the left adrenal gland. The area of the right adrenal gland is normal and the wedge-shaped normal gland is visualized. On the left side the ovoid-shaped gland is shown about four to five times the size of a normal adrenal gland.

Barker,¹³ by Quinby¹⁴ and others that with continued growth of the tumor a continuous sustained hypertension may follow the intermittent hypertension so that a symptomatic picture may be present that in time may resemble the so-called essential hypertension.

The tumor and its syndrome occur more frequently in young or middle adult life. It may occur in children. It is rare in old age. It has been described in both sexes but is much more frequently seen in women.

The usual symptom complex of paroxysmal hypertension may occur either spontaneously or may be induced. Usually the symptoms are brought about by emotional crises or sudden physical activity. In the same person the symptoms are usually similar each time they occur. They start often with a pronounced beating of the heart, a pounding headache, epigastric distress or pain and often a sense of constriction of the hands and feet. The attack is emotionally disturbing and may be associated with a sense of impending death; it may last for a few minutes to several hours. With the ending of the attack, excessive perspiration occurs, with exhaustion and fatigue, and if the attack lasts long or is severe it may be followed by shock. After the attack there may be cutaneous dilation of the blood vessels of the hands and feet, which are cold, at times blanched, during the attack. Associated with the attack is a definite rise in both systolic and diastolic blood pressure and a subsequent fall to normal or a lower level on its ter-

8. Labbe, M. J., and Tinel Doumer: Suprarenal Tumor, *Bull. et mem. Soc. med. d. hop. de Paris* 46:982, 1922.

9. MacKeith, R.: Adrenal Sympathetic Syndrome, *Brit. Heart J.* 6: 1, 1934.

10. Beer, E.; King, F. H., and Prinzmetal, M.: Pheochromocytoma With Demonstration of Pressor Substance in Blood Preoperatively During Hypertensive Crises, *Ann. Surg.* 106:85, 1937.

11. Goldenberg, M.; Snyder, C. H., and Aranow, H., Jr.: A New Test for Hypertension, *J. A. M. A.* 135:971, (Dec. 13) 1947.

12. Palmer, R. S., and Castleman, B.: Paraganglioma of Adrenal Gland Simulating Malignant Hypertension, *New England J. Med.* 219: 793, 1938.

13. Howard, J. E., and Barker, W. H.: Paroxysmal Hypertension, *Bull. Johns Hopkins Hosp.* 61:371, 1937.

14. Quinby, W. C.: *Tr. Am. A. Genito-Urin. Surgeons* 36:103, 1943.

mination. Examinations of blood and urine during and for a while after the attack show sugar curves similar to those seen with diabetes mellitus. This is more often seen in adults and older persons and less frequently seen in children. At times death may occur during or after an attack, most often associated with pulmonary edema.

In some cases a more sustained and continuous hypertension may result as the disease progresses, so that the symptoms may be confused with "essential hypertension." When such occurs, vascular changes may result and may remain permanent even though the tumor is removed. These vascular changes may be present in the eye grounds. The type of vascular changes in the eye grounds occurring in the cases in children has been reported by Bruce¹⁵ to be specific to the condition and not seen by him in other hypertensive conditions.

The diagnosis of pheochromocytoma depends on (1) a history of typical attacks and associated clinical findings; (2) evidence in so-called essential hypertension of the symptomatic and clinical findings in the pheochromocytoma syndrome; (3) demonstration in the blood during the attack of a pressor substance as shown by Beer, King and Prinzmetal¹⁶ or, more easily, a significant reduction in the blood pressure by the intravenous introduction of an epinephrine antagonist, such as the benzodioxane series as described by Goldenberg, Snyder and Aranow¹⁷; (4) precipitation of an attack in the resting stage by an epinephrine-producing stimulus such as histamine, as described by Roth and Kvale,¹⁸ and (5) roentgenographic evidence in a case with the syndrome of the presence of the tumor, without or with perirenal insufflation of air or by renal displacement as shown through the use of films with pyelographic mediums.

A number of metabolic changes have been found with these tumors. The differentiation between hyperthyroidism and pheochromocytoma by symptoms is sometimes difficult. Concomitant swelling of the thyroid with tumor and syndrome has been described by Bauer and Belt.¹⁷ Elevation of the serum potassium and increased urea clearance have been found. The glycosuria present may confuse the diagnosis, but it is usually resistant to the ordinary treatment of diabetes mellitus. The sugar changes, as before stated, are greater in older persons. Hysteria and psychoneurosis may present difficulties in diagnosis.

Recent operative reports show a decided lowering of the mortality in the surgical therapy of these tumors. The only known cure is removal. The use of tribromoethanol in anesthesia induction has usually avoided the precipitation of an attack. Because of their situation and the possibility of multiplicity, the transperitoneal approach has been used most frequently. In the removal of these tumors danger lies in their handling during the operation. Experience has shown that all vessels to and from the tumor should be ligated before the tumor is handled. Handling of the tumor without vascular separation has been shown in some cases to be immediately followed by death, from release of a

fatal excess of epinephrine. When the tumor is successfully removed, there is an immediate fall of blood pressure. This at first may require administration of epinephrine but usually shortly afterward returns to normal levels. In some cases the return is slow and accompanied by lethargy. After removal there is usually no mortality and cure results. Cases have occurred in which symptoms have persisted after removal of a tumor. This has usually been due to the presence of another unrecognized tumor, which is another reason for complete transperitoneal examination of the abdomen, because by far most of these tumors are intra-abdominal. Rarely, because of vascular difficulties or vascular attachments, a tumor may be incompletely removed. Not infrequently the persistence of the symptoms is due to functioning metastases. There are no known clinical means for determining whether the lesion is benign or cancerous either before operation or at operation, except by noting extension of the tumor through its capsule and local invasion—the usual extension of these tumors, because death most often intervenes before widespread metastases occur.

These tumors cytologically show excess of pheochromocytoma cells with increase of interstitial stroma and ganglion cells. The hormonal activity of these cells can be determined by biologic assay or by demonstrating the amount of hormonal material in the cells by special stains. Malignancy is determined by the cell structure and by the cell invasion through the stroma and capsule.

TUMORS OF THE ADRENAL CORTEX

Tumors of the adrenal cortex are classified as follows¹⁸: (1) tumors with no recognizable hormonal changes in the patient; (2) tumors with changes due to hormonal influence on the secondary sex characters (adrenogenital); (3) tumors with changes due to hormonal influence on various metabolic processes (adrenometabolic tumors) (Cushing's syndrome), and (4) tumors with changes due to various hormonal influences, both of the adrenogenital type and the Cushing syndrome of the adrenometabolic type (a mixed syndrome).

Nonhormonal Tumors Of Adrenal Cortex.—The nonhormonal tumors are not infrequent. They have occurred mostly in adults, usually over 30 and more often in the later decades, and have been seen in both sexes. They are usually silent. When recognized, they have usually been present for a considerable time. At first without any symptoms, they may later cause a deep pain in the abdomen or pain in the flank on the side in which the tumor is present. Often they are studied by roentgen examination of the gastrointestinal tract without discovery. Later, with increasing size of the tumor, a mass is found on the affected side. The deep location of the adrenal gland and the slow growth of the tumor and its slowness of invasion of adjacent viscera often allow the tumor to grow extremely large before it is discovered. The pain occurring may be abdominal and in the flank or both and is usually made worse by activity. There are frequently some loss of weight, fatigue and diminution of appetite, and mild anemia may be present. These tumors are not tender. Not infrequently, at

15. Bruce, G. M.: Personal communication to the author.
16. Roth, G. M., and Kvale, W. F.: Tentative Test for Diagnosis of Pheochromocytoma, *J. Lab. & Clin. Med.* 30:366, 1945.
17. Bauer, J., and Belt, E.: Paroxysmal Hypertension Due to Pheochromocytoma of Right Adrenal Gland, *J. Clin. Endocrinol.* 7:30, 1947.

18. Cahill, G. F.: Hormonal Tumors of the Adrenal, *Surgery* 16:233, 1944.

the time of the first recognition of the tumor, pulmonary metastases may be demonstrated by thoracic roentgenograms. In others, in spite of the extraordinarily large size of the tumor, no metastases seem to occur.

When examined by roentgen rays, especially with pyelographic studies, these tumors usually show a mass in the flank above the kidney and displacing it downward on that side. At times the tumor may project anterior to the kidney, and its outline may be demonstrated by the shadows of other viscera. If the tumor is small it may be necessary to demonstrate its presence by perirenal insufflation of air. If the tumor is large and freely palpable such a procedure may not be necessary. Some of these tumors have occurred in accessory adrenal glands, either in the prerenal area, where they have been



Fig. 8 (A.M.).—A retrograde pyelogram of a case of a large carcinoma of the left adrenal gland, without any hormonal symptoms. The large dense shadow of the tumor is seen above; it has pushed the kidney down and turned it so that it is visualized as if it were seen with the lower pole anterior and the upper pole posterior.

confused with tumors of the tail of the pancreas, or in the broad ligament of the pelvis, where they have been taken for ovarian or other pelvic tumors. Most of these tumors, although definitely encapsulated, are malignant, and because of their silence and large growth the prognosis is sometimes poor. The tumors are often irregular in shape, may be nodular and may vary within the tumor from dense hard areas to softer areas, often necrotic. They are yellowish and resemble the clear cell hypernephroma of the kidney in gross appearance. On microscopic section they show cells of bizarre shapes and sizes and arrangements. In some of these tumors the cells are of tremendous size; the largest cells occurring in the human body have been seen in these tumors. Only rarely are cells with vacuoles containing steroids seen in this type.

The accepted therapy is complete removal of these tumors, usually through a transverse or oblique anterior transperitoneal approach. After the posterior peritoneum fascial planes are opened the viscera anterior to the tumor are usually displaced downward and inward, and after the vessels to the

tumor are ligated they usually are removed easily in spite of their huge size, because of their encapsulation. Recovery from removal is the rule, and as numbers of these patients have apparently no metastases, freedom from extension or recurrence often occurs.

Hormonal Tumors of Adrenal Cortex.—Tumors with



Fig. 9 (S.S.).—An air insufflation roentgenogram in a case of carcinoma of the left adrenal gland in a male without hormonal symptoms. The rounded denser shadow shows the adrenal gland growing down in front of the kidney, which can be visualized through the tumor because of the air, which also surrounds the kidney within Gerota's fascia.

changes due to hormonal influence on the secondary sex characters are divided into: (a) changes due to excess androgens (1) in a girl toward adult masculinity, (2) in a boy toward adult masculinity; (b) changes due to excess estrogens (1) in a man toward femininity.

Tumors with Symptoms Due to Excess Androgens: In a girl toward adult masculinity. When the disease occurs at birth or in early childhood the symptoms have been described as pseudohermaphroditism. The changes of male character due to excess hormonal secretion are not infrequent in girls, but tumor as a cause is rare. The most frequent cause of the changes is bilateral adrenal hypertrophy. With the exception of survival time there is often no difference between the symptoms of bilateral adrenal hypertrophy and unilateral tumor. Both begin with hypertrophy of the clitoris, appearance of hair on the genitals, excessive bodily growth for a while, increase in musculature, deepening of voice, accelerated epiphyseal and dental development and often a higher mental aptitude for their age. Acne is often present. There is often a decrease in size of the vagina and other female characters. The children are at times aggressive and combative like boys. Some, on the other hand, acquire a shut-in personality.

When the symptoms are due to tumor, the tumor may be adenoma or carcinoma. The tumors are most often unilateral, and are well shown with roentgenograms taken after insufflation of air. The urine contains androgens far in excess of their age. These androgens are now registered by the amount of 17-ketosteroids excreted in the urine. Very high excretion of 17-ketosteroids has been described as due only to carcinoma, but recently similar high excretions have occurred with bilateral adrenal hypertrophy.

The older prepuberty girls with the syndrome do not menstruate even though the period of puberty has been reached. Rarely a fleeting menstruation has been reported. With the older children a more general hirsutism is apt to develop on face, lips, chest and back, and acne is usually present. In these children the voice may be surprisingly deep. A rapid transitory growth of the child is often followed by a closure of the epiphyses, and if the child recovers from the disease, relative shortness in stature may be the result.



Fig. 10 (M.H.).—An air insufflation roentgenogram of a girl with male puberty symptoms, due to a large cancer of the right adrenal gland. The air infiltrated around the left adrenal gland but poorly around the right, which is shown as the dense mass round in shape above the area of the right kidney.

Tumors in a woman causing changes toward adult masculinity. In the woman after puberty and before menopause there occurs what is called the adrenogenital syndrome. According to Wintersteiner¹⁹ this in its broadest sense comprises all conditions in which the abnormal changes in the sexual sphere are referable to organic or functional disturbances in the adrenal cortex. In these women it consists of the appearance of male secondary sex characteristics and the suppression of female characteristics and function. When the syndrome becomes established after puberty or later in life, the first change noted is the appearance of hair on face and body of male type; this, called hirsutism, is followed by irregularity or cessation of the menses, changes in body contour and enlargement of the clitoris. Such syndromes are not infrequent. In many clinics women appear with some or all of the symptoms, seeking a change back to normal. From studies made on these patients, tumor of the adrenal gland is not a frequent cause of the change. Normal anatomic or hypertrophied adrenal glands are usually noted. When tumor does occur, however, the symptoms are clearcut. The hair definitely has an acceleration of growth; when menses cease the cessation is complete. Headaches at the time of menses are frequent with tumor. Acne is present and may be pronounced; clitoral hypertrophy is evident, and the younger the patient the more pronounced is the change. Deepening of the voice, and recession of breasts, labia, uterus and sexual desire often follow. Associated with these changes are the appearance of excess amounts of androgens

in the urine. These are now determined by the estimation of the 17-ketosteroids, and with tumor these have been high in these cases, over 100 mg. per liter.

It is in this type of case that the roentgenograms taken after insufflation of air have been most helpful in the diagnosis. The clear fascial planes in these cases allow the air to infiltrate easily and outline the adrenal glands and tumor, if present, extremely clearly.

When tumor is present in these females, both children and adults, surgical removal is indicated. It may be done through the flank or preferably transperitoneally. Removal of these tumors is not difficult and is usually free from complications of adrenal failure. Recovery is rapid and the regression of the male characteristics occurs with the restoration of those of the female. Menses often return in a month or so and the excess hair sheds most profusely at the menstrual periods. Most of these tumors have been adenoma or adenocarcinomas and the cells have acidophilic granules in the cytoplasm, and some have steroid vacuoles. The excess of granular cell cytoplasm has given the name of "granular cell tumors" to this group.

In a boy toward adult masculinity. The usual symptom described in the class has been precocious puberty (*pubertas praecox*). Precocious puberty by itself is not infrequently seen with many causes. Adrenal tumor is a rare cause, much less frequent than similar tumors in girls.



Fig. 11 (F.H.).—An air insufflation roentgenogram of a boy with precocious male puberty. The round outline of the adrenal tumor is shown between the spleen above and the kidney below. This was a "granular cell" tumor.

When tumor occurs there is an increase in size of penis and scrotum without corresponding increase in size of the testes. Hair appears on the pubis and may appear on the face. The child shows increased growth, muscularity and dentition, and advanced epiphysial changes can be seen roentgenologically. The growth may be of the infant Hercules type. The child is often aggressive and unruly and may show postpubertal changes with masturbation and sometimes ejaculations. There

19. Wintersteiner, O.: Adrenogenital Syndrome, *J. A. M. A.* 116: 2587, (June 14) 1941.

is a decided increase of androgen output in the urine as shown by the estimation of the 17-keto-steroids

In these cases the roentgenograms after insufflation of air have again clearly shown the adrenal status, especially presence or absence of a tumor. If a tumor is present, operative removal is indicated. Some of these boys have shown mixed syndromes suggestive of excess of other metabolic hormones besides the androgenic. These syndromes, such as obesity and redness of face with hemoconcentration, would require adrenal substitution therapy during and after removal of the tumor, because such metabolic syndromes are often associated with atrophy of the opposite adrenal gland and substitution therapy may be necessary until the opposite adrenal gland resumes secretion.

Some of the tumors have been adenomas and others adenocarcinomas. Like the tumors in females they have cells with acidophilic granules in large numbers if only the adrenal-sex syndrome is present, but if obesity and other signs of Cushing's type are present there will be found large numbers of foam cells, cells with multiple steroid droplets in the cytoplasm.

When the tumor has been successfully removed in these cases there is a recession of the child's precocious puberty and the child resumes a normal course of life. The fixed changes in the epiphyses do not regress.

Tumors With Symptoms Due To Excess Estrogens.—

Tumors with symptoms due to excess estrogens are rare, producing changes in a man toward femininity. The usual symptoms are decrease in size of the penis, enlargement of the breasts and nipples, loss of sexual desire and impotence. The symptoms have been progressive in the few rare cases in which the disease occurred and then with loss of weight, anemia and emaciation; a tumor mass was found in the abdomen as the cause. Levy-Simpson and Joll²⁰ showed in 1 of these cases that the effect on the patient was the result of excess estrogens elaborated by the adrenal tumor. The excess estrogens disappeared from the urine on the removal of the tumor, with disappearance of the symptoms. After a time the symptoms reappeared with reappearance of excess estrogens in the urine, when multiple metastases appeared in the lungs and liver before death. The few reported cases have been mostly carcinoma of the adrenal gland and all have been fatal. Fortunately, because of the unique syndrome autopsy studies have been thoroughly made in these few cases.

Tumors with Syndrome Due To Hormonal Influences on Various Metabolic Processes: (Cushing's Syndrome) The syndrome which was described by Cushing,²¹ who suggested that it might occur with basophilic adenoma of the pituitary, was also recognized by Achard and Thiers²² in their "diabetes of bearded women." Cushing, however, outlined a clinical picture in either male or female, consisting of a rapid plethoric painful obesity affecting primarily the face, neck and abdomen but usually sparing the extremities, this giving rise to

an obesity described as the "buffalo type." The facial changes made the eyes appear small and slitlike, like those of pigs, and the picture is called "moonface." There was acrocyanosis with purplish linear atrophy on the lower part of the abdomen and the thighs. Hirsuties might be present. There was a tendency toward polycythemia and some hypertension, and glycosuria were of frequent occurrence. With the syndrome came muscular weakness and porosis of the bones, causing a cervicodorsal stoop and a shortening of the stature. Amenorrhea was present in the women and impotence in the men. There was a definite susceptibility to infectious processes and to physical stress. Mental changes were present and in some, well developed psychoses occurred. Much discussion has occurred as to the cause of Cushing's syndrome. It has been definitely shown that it may be caused by adrenal tumor and that, if the tumor was removed and the patient survived the acute adrenal depletion following, the syndrome described by Cushing gradually disappeared and the patient returned to normal health.



Fig. 12 (H.P.).—An air insufflation roentgenogram of a woman with Cushing's syndrome due to tumor of the right adrenal gland. The ovoid tumor is clearly seen in the outer part of Gerota's fascia above the right kidney. This was a "foam cell" tumor.

Albright²³ from his study stated that the Cushing syndrome is a definite opposite syndrome from the adrenogenital syndrome, the first due to excess production of the S hormone and the latter to excess production of the N hormone. All patients with Cushing's syndrome suffer from an hyperadrenocorticism. The complicated metabolic changes which vary in all patients suffering from the disease make a standard impossible.

The syndrome is most frequently seen in women, less so in men, and it occurs rarely in children. The most frequent adrenal change found associated with the syndrome is bilateral adrenal hypertrophy with microscopic section showing changes known as "foam cell adrenals." Tumor of the adrenal gland occurs as a cause less frequently. The tumors are usually adenomas; rarely is carcinoma found as a cause of true metabolic syndromes. When the syndrome occurs the diagnosis may be made by roentgenograms of the adrenal gland after insufflation of air or by bilateral exploration. Operative removal of these tumors may be followed by acute adrenal deficiency and death if the opposite adrenal

20. Levy-Simpson, S., and Joll, C. A.: *Feminization in Male Adult With Carcinoma of Adrenal Cortex*, *Endocrinology* 22: 595, 1933.

21. Cushing, H.: *Basophil Adenomas of Pituitary Body and Their Clinical Manifestations*, *Bull. Johns Hopkins Hosp.* 50: 137, 1932.

22. Achard, G., and Thiers: *Le virilisme pileux et son association à l'insuffisance glycolytique: Diabète des femmes à barbe*, *Bull. Acad. de med.* 56: 51, 1921.

23. Albright, F.: *Cushing's Syndrome*, in *Harvey Lectures*, 1942-1943, Baltimore, Williams & Wilkins Company, 1944, p. 123.

gland is in a nonfunctioning state due to the excess hormones of the tumor. Administration of a potent hormone substance in sufficient amount until the nonfunctioning adrenal gland has resumed its normal role in metabolism is the therapeutic step for correction of the acute Addisonian crisis.

Tumors with Changes Due to Hormonal Influence on the Secondary Sex Characters and on Other Metabolic Processes: A clinical case of mixed syndrome is sometimes seen as often as the Cushing type. The most frequent adrenal cause has been bilateral adrenal hypertrophy. It has been caused by tumor, and a high proportion of these tumors have been carcinoma. It occurs more frequently



Fig. 13 (L.F.).—An air insufflation roentgenogram in a case of carcinoma of the right adrenal gland with "mixed" syndromes. The outline of the tumor can be seen above the right kidney. The tumor was globular and compressed tightly against the liver. The cells of this tumor were both granular and foam cells.

in the female in an older age group but has occurred in both male and female children.

When the syndrome occurs in women with carcinoma, the sexual changes are not as great as in Cushing's syndrome. The diagnosis of 3 such cases in the Squier Clinic was made by the symptoms and the roentgenograms after insufflation of air. Operative removal of the tumors in these cases was followed by acute adrenal deficiency. In one of the cases recovery was undoubtedly due to metastases functioning subsequent to removal of the adrenal tumor. In the 3 cases of this group at that clinic, microscopic section showed all to be carcinoma of both cells with granular cytoplasm and with foam cells.

CANCER OF THE TESTIS

Testicular tumors are not infrequently observed in urologic practice. Eighty-two cases were noted in over 27,000 admissions to the Squier Clinic, and Young²⁴ reported the finding of 25 tumors among 12,000 admissions at the Brady Clinic. Tanner²⁵ estimated that this type of tumor occurred once in every 2,000 hospital admissions. Hinman²⁶ reported that it occurred among 0.063 per cent of male patients admitted to the hospital. It made up about 0.57 per cent of all tumors. Dean²⁷ stated that testicular tumors represent 1.008 per cent of all tumors of both sexes and that 2.09 per cent of all

malignant tumors of males were primary in the testis. The right side seems to be slightly more involved than the left. Bilateral involvement occurs, simultaneous or subsequently; the tumors are rare and are more frequent in cryptorchids.

It has been stated, and it appears to be supported by study, that tumor is more frequent in undescended testes than in normal testes. Incidence of tumors in undescended testes varies from 8.4 per cent reported by Higgins and Buchert²⁸ to 14.29 per cent reported by Dean.

The tumors occur most often in the period of maximum sexual activity. They may occur in infancy, usually as a teratoid, or may occur in old age, more often as a seminoma.

A history of trauma may be elicited in many cases of testicular tumors. The frequency varies from 10 to 30 per cent, according to the author (Cairns,²⁹ Dean,²⁷ Smith,³⁰ Higgins and Buchert²⁸). The fact that the testis is an exposed organ and that even trivial injuries are painful and more apt to be remembered by the patient may contribute to the large incidence of trauma that is in the literature.

Over the last forty years there have been many divergent pathologic classifications of testicular tumors. New growths may arise from any type



Fig. 14.—A plain roentgenogram of the abdomen in a case of carcinoma of the left testis and a metastases in the left lumbar glands giving a bulge shadow to the upper part of the edge of the left psoas muscle. A case suitable only for external radiation.

of cell in the testis. Adami³¹ best described the testicular cell itself as a tripotent cell which has the power to give rise to every order of cell in the body. Thus tumors may occur from any of the three germinal layers, the epiblast, mesoblast and hypoblast. The majority seems to be of two main types, the seminoma tumor from the seminal cell and those of teratoid or embryonal origin. A classification used by Friedman and Moore³² may be suggested because it is simple: (1) seminoma (germinoma), (2) embryonal carcinoma, (2a) chorioepithelioma, (3) teratoma and (4) teratocarcinoma. According to Friedman and Moore, over 96 per cent of the 922 tumors of the testis seen by them in

24. Young, H. H., and Davis, D. M.: *Young's Practice of Urology*. Philadelphia, W. B. Saunders Company, 1926, p. 672.

25. Tanner, C. O.: *Tumors of the Testicle with Analysis of One Hundred Original Cases*, Surg., Gynec. & Obst. 35: 565, 1922.

26. Hinman, F.: *The Prognosis and Treatment of Tumors of the Testis*, J. Urol. 34: 72, 1935.

27. Dean, A. L., Jr.: *Teratoid Tumors of the Testis*, J. A. M. A. 105: 1965, (Dec. 14) 1935.

28. Higgins, C. C., and Buchert, W. I.: *Malignant Tumors of the Testicle: Review of Eighty Three Cases*, Am. J. Surg. 43: 675, 1929.

29. Cairns, H. W. B.: *Neoplasms of the Testicle*, Lancet 1: 845, 1926.

30. Smith, G. G.: *Diseases of the Scrotum and Testicle*, in Cabot, H.: *Modern Urology*, ed. 3, Philadelphia, Lea & Febiger, 1936, p. 397.

31. Adami, J. G., and McCrae, J.: *Text-Book of Pathology*, N. Y., Lea & Febiger, 1914, p. 325.

32. Friedman, H. B., and Moore, R. A.: *Tumors of the Testis*, Mil. Surgeon 59: 573, 1946.

the Army Institute of Pathology fell into these categories. Whatever classification is used or whatever interpretation is made about testicular tumors it should be understood that pathologists and clinicians agree that for all practical purposes all tumors of the testis are to be regarded as cancerous.

The common tumors of the testicle more often form metastases by way of the lymphatics. The

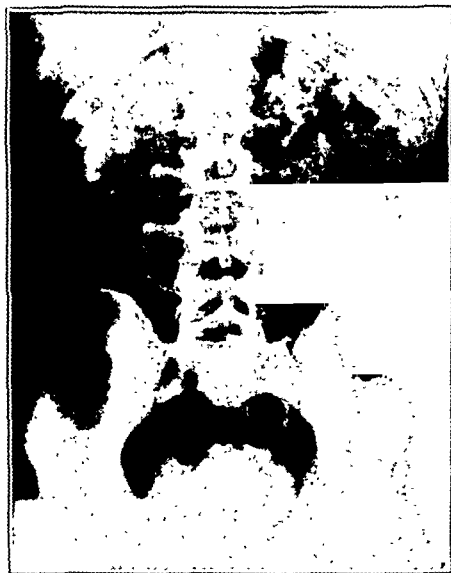


Fig. 15.—An intravenous pyelogram in a case of a small carcinoma of the right testicle. Hydronephrosis of the right kidney and the outline of the metastases overlying the right renal vessels and causing the hydronephrosis may be seen. A case suitable only for external radiation.

teratogenous tumors are thought to metastasize earlier than the seminomas. The metastases of both at times may be early but more often the tumor may be present for a considerable period without metastases. Metastases do occur by way of the blood stream but much less frequently and may give rise to general metastases without involvement of the primary lymphatics.

The primary lymphatics of the testicles drain along with the spermatic vessels, cross the ureter and empty in the lateral lumbar nodes. These lie lateral to, around and in front of the large vessels below the renal vessels. The chain of nodes extends from the common iliac artery to the renal vessels. The secondary lymphatics drain into (1) the primary nodes of the opposite side and (2) nodes behind and between the great vessels above and below the renal veins. Extension from these glands may be to and through the mediastinum and to the supraclavicular group.

Involvement of the lungs may occur by lymphatics or by the blood stream, appearing as round masses, denser than normal lung tissue, and scattered throughout the lungs. Metastases may occur generally in the liver, facial bones, intracranially and in various places. Metastases in many cases must be late because the enlargement of the testis has often been noted for years. Testicular tumors rarely break through their fascial coverings and invade the scrotum. Extension to the scrotum has been seen with exploratory puncture or ill advised incision into the tumor. Only when these unusual fascial invasions occur does one see involvement of the inguinal nodes, or rarely these nodes are involved late by retrograde flow after the retro-

peritoneal nodes are blocked with tumor infiltration.

Seminomas.—Roughly one third (35 per cent) of the tumors reported by Friedman and Moore were seminomas. This was from a group of patients mostly between 19 and 39 years of age. From all age groups, Cabot and Berkson³³ stated that seminoma occurred in 59 per cent of proved testicular tumors. Similar figures were reported by Geist and Thalheimer,³⁴ by Herman³⁵ and by Nash and Leddy.³⁶ It is of record that seminoma occurs more frequently with increasing age.

These tumors are grossly round or ovoid, elastic, with uniform appearance and heavy to feel. The microscopic appearance is of mostly uniform size rounded monocellular elements with clear cytoplasm. These cells are considered to arise only from the seminal cells. The cells are remarkably uniform and are usually in masses or cords divided by trabeculae of connective tissue. There may be lymphocytic infiltration of this connective tissue, and foci of coagulation necrosis are frequently encountered in these tumors. Occasionally variations of structure occur, so that about 4 per cent of the



Fig. 16.—An intravenous pyelogram in a case of carcinoma of the left testicle, with a large palpable left epigastric mass of metastases that displace the left kidney laterally and obstruct it. This case is suitable only for external radiation.

tumors will have some embryonal carcinomatous tissue. Seminomas usually do not invade or destroy tissue planes or adjacent structures and scrotal invasion is rare.

Embryonal Carcinoma.—Embryonal carcinoma shows considerably more variation in its cell components. The cells are of various shapes, and frequently glandular or papillary structures are present. These tumors are often of undifferentiated cells and appear as solid sheets of anaplastic cells with large and bizarre nuclei. Syncytial cell masses may be seen. Some have frankly teratoid structures, such as the embryo masses of Melicow.³⁷

33. Cabot, H., and Berkson, J.: *Neoplasms of the Testis: Study of the Results of Orchidectomy With and Without Radiation*, New England J. Med. 330: 192, 1939.

34. Geist, S. H., and Thalheimer, W.: *Histopathology of Carcinoma of the Testicle*, Ann. Surg. 66: 571, 1917.

35. Herman, L.: *The Practice of Urology*, Philadelphia, 1938, W. B. Saunders Company.

36. Nash, L. A., and Leddy, E. T.: *Seminoma of the Testis*, Am. J. Roentgenol. 50: 162, 1943.

37. Melicow, M. M.: *Embryoma of Testis*, J. Urol. 44: 333, 1940.

Choriocarcinoma.—Choriocarcinomas have two cellular components and in their arrangement tend to duplicate the placental villi. The two groups are a mass of compact cells with giant multinucleated cells at the borders of these masses. A complete choriocarcinoma is rare. Focal choriocarcinoma occur in about 12 per cent of embryonal carcinomas and teratocarcinomas. Gynecomastia and changes in the endocrine glands occur in cases of choriocarcinoma by itself and in the cases of focal choriocarcinoma.

Teratomas.—Epithelial masses, glands and cysts in association with some undifferentiated tissue and specialized structures such as cartilage or bone make up the usual character of the teratomas. Rarely are teeth and hair present in these tumors. The tissue seen is mostly of differentiated adult type.

Teratocarcinoma.—Teratocarcinomas are a large group of testicular tumors in which differentiated teratoid structures are present with histologically cancerous elements of embryonal carcinomas and choriocarcinomas. Less often will there be semi-nomatous components present.

CLINICAL FEATURES OF TESTICULAR TUMORS

The subjective symptoms of testicular tumors either may be nonexistent or may vary according to the interpretation of the patient. In most cases the presenting sign is enlargement of the testis. Usually the duration of the enlargement may not be known. If the tumor occurs in an undescended testis the first presenting sign may be a mass metastasis. The tumor mass usually is without pain or tenderness. A dragging or uncomfortable feeling is as far as pain goes. Some patients definitely state that the testis feels heavier than it should. At times an associated hydrocele may be present, fluid from which is bloody. Some complain of an abdominal mass in addition to scrotal enlargement. Others may have fixed pain in the back and unrecognized testicular change. Enlargement of the breasts may occur without recognition of change in scrotal contents. All in all there is no definite group of symptoms, most patients coming for consultation because of simple enlargement of the scrotum.

DIAGNOSIS

All enlargements of the scrotum form a group among which tumor of the testis must be recognized. Tumor of the testis involves the testis only. It may be smooth and it may be irregular and nodular. It usually has some areas of rather decided hardness and is much heavier than fluid or normal tissue of the same size. The heaviness of testicular tumor is a characteristic of this particular neoplasm. It is movable in the scrotum, rarely fixing itself to its coverings or the scrotum. The mass is rarely tender, has no feeling of heat and shows no change in the color of the skin. Enlargement of the scrotal veins may be present. The vas is usually normal. Puncture biopsy for diagnosis is not recommended in these tumors.

Tumor of the testis must be differentiated from (1) tuberculosis, (2) syphilis, (3) hydrocele and (4) spermatocele. 1. Tuberculosis almost always involves the epididymis, either head, body or tail. It usually is not painful but may be so and may be somewhat tender. The involved area often fixes itself to the surrounding tissues and may cause a surface area of redness, may cause edema and may

form a sinus. Beading or induration of the vas may occur, as well as nodules in the seminal vesicles or the prostate. Tubercle bacilli may be found in the seminal fluid, rarely in the urine itself. 2. Two forms of syphilis are seen, one a small fibrous testis, practically never mistaken for tumor and the other a large gumma, which is frequently mistaken for a tumor. A positive serum reaction is evidence of syphilis and a blood test should be a necessary step in all cases of scrotal masses suggestive of tumor. Tumor of the testis may occur in persons having syphilis and with positive serums. If a supposed gumma does not rapidly resolve under active antisyphilitic treatment, it should be considered as a tumor of the testis. 3. Hydrocele occurs frequently by itself. It may be associated with tumor and the tumor may be discovered after the fluid is removed. Some hydroceles with thick opaque sacs, containing cholesterol plaques, at times make a differentiation difficult. 4. Spermatocele or cysts usually arise from the epididymis. They are round, elastic and not heavy and frequently can be transilluminated.

THE HORMONE TESTS IN DIAGNOSIS

The demonstration of a gonadotropic hormone in the urine of patients was first described by Zondek.³⁸ At first considered a reliable test, experience has shown that the amount of gonadotropic hormone with testicular tumors is determined by the amount and activity of syncytial secreting cells within the tumor. When properly performed and interpreted the test is dependable and valuable. The reaction is usually negative (less than 300 mouse units) in seminoma and negative in adult teratoma. It is positive in various stages in the teratocarcinomas and embryonal carcinomas and ranges from 500 to 10,000 mouse units, depending on the amount of syncytial tissue present. Its most valuable use is in presenting the diagnosis of choriocarcinoma in which secretions of 10,000 to over 150,000 mouse units have been recorded. A reaction to the test with gonadotropic hormone is of no value in determining cancer. A high positive reaction is conclusive of choriocarcinoma. At present the presence of hormone excreted in the urine with a testicular tumor (1) shows the presence of hormonal secreting cells and (2) may show the amount of secretory activity of the cells in tumors such as choriocarcinoma or the cellular bulk present in the less actively secreting teratomas. Thus the presence of a large amount of hormonal excretion with a small testicular tumor would imply an actively secreting tumor or many metastatic secreting cells elsewhere than the primary tumor. If no metastases are demonstrable it would be more probably from the primary tumor, probably a choriocarcinoma. By itself the presence of the hormone is no criterion for determining whether metastases are present. After the primary tumor is removed an abnormal hormonal secretion is evidence that secretory metastatic cells are present somewhere else. The presence of high hormonal secretion may show itself clinically by gynecomastia, either enlargement of nipples or breasts or both.

38. Zondek, B.: *--- und Hypophysenvorderlappenhormone, Klin. in the Diagnosis of* *Gonadotropic Hormone* M. A. 108:607, (Feb. 20) 1937.

TREATMENT

Before any treatment is undertaken in testicular tumors it is essential to determine whether metastases are present. To demonstrate these a number of means are at hand. Supraclavicular (Virchow's) metastases are palpable and should be carefully looked for. Roentgenograms of the chest, preferably stereoscopic films, will show metastases to blood vessels and lung or mediastinal lymphatic masses. Retroperitoneal metastases usually are in the epigastric or hypochondriac area of the side involved. If large they may be palpable. Since the lymphatics of the testes run in the same fascial plane as the ureter and cross it and since the lymphatics near the edge of the psoas muscle or in the preaortic area may be and often are involved, some of these planes and tissues may be outlined roentgenographically. Changes of shape of the edge of the psoas and deflections of the ureter or renal pelvis can be shown by an intravenous urogram, and when present with testicular tumor are usually due to metastases. At times with intravenous pyelograms a deflection of the kidney may be noticed. Occasionally the ureter may become involved by tumor and show by obstruction to the ureter at that level on the pyelogram. It is regrettable, but a considerable number of cases show evidence of metastases when first seen.

If no metastases are demonstrable then surgical treatment may be considered. Simple orchidectomy offers a cure in the rare noncancerous adult teratomas. It may also cure an early cancer that as yet has no extension to the lymphatics. It may also offer a positive pathologic type of diagnosis in cases of suspected metastases to determine the amount and course of roentgen ray therapy. It is the prevailing surgical procedure of large numbers of surgeons, who remove the testicle complete with its coverings through a high inguinal incision with division and ligation of the cord as the primary steps before the handling of the tumor. After removal of the testis and with healing and recovery, roentgen therapy is or is not given, depending on the tumor, the therapist and the patient.

There is a number of surgeons who believe that a removal of the lymph nodes of the lumbar and preaortic area with the fascial planes of the spermatic vessels should be done at the same time as the removal of the testis. This is recommended only if no demonstrable masses are present. In numbers of these so removed, microscopic metastases have been demonstrated. The extension of the operation from a simple orchidectomy to this "radical orchidectomy" in the hands of its proponents has not led to any increase in the operative mortality and has given a greater percentage of freedom from recurrence than any other method. It is not at all suitable in the presence of demonstrable metastases, especially if they are without the area possible of removal. Study has shown that in autopsy in terminal cases there are widespread metastases but that the routes of these in early cases is often through lymph channels not difficult to extirpate sufficiently. The operation is especially of value in the early teratocarcinomas or mixed tumors because of their well recognized resistance to roentgen therapy. Although seminomas are radiosensitive, surgical removal of early seminomas by radical removal is preferable because their slower

growth, their remaining stabilized in nodes for some time and lack of infiltration make removal of these nodes not difficult.

ROENTGEN THERAPY

As in the case of the pathologic and other classifications of testicular tumors, a classification of the methods of radiotherapy for these testicular tumors is difficult. For a while there seemed to be as many radiologic technics for treating testicular tumors as there were radiologists. However, since the work of Dean and others, changes have occurred based on experience and end results. There is still uncertainty as to the relative value of preoperative radiation. Dean³⁹ has presented statistics that appear to demonstrate that in his group of all types of testicular tumors, the survival rate for the patients who had received preoperative irradiation was higher than that for patients who had received irradiation only after orchidectomy. Subsequent to the course of preoperative therapy, orchidectomy is performed about five to six weeks later. Preoperative irradiation has been opposed by some authors, including Smith, Dresser and Mintz,⁴⁰ Hinman and Powell⁴¹ and MacKenzie and Ratner.⁴²

Postoperative radiation after the primary orchidectomy has been widely used. Since the advent of the technic of protracted fractional doses of roentgen rays, this method or some modification of it has been most often employed. An increasing number of clinics use higher voltage in the treatment of testicular tumors as well as in other cancers. Others are of the opinion that the radiation is best carried out at potentials of the so-called moderate voltages (Nash and Leddy³⁶).

It is the consensus that roentgen therapy is of primary importance in the management of seminoma of the testis and has profoundly altered its prognosis. The results apparently are far different in the teratocarcinomas or mixed tumors which have shown a more variable resistance to the therapy. Recently more massive doses over longer periods have been suggested and used for these teratoids. Complicating damage to the stomach, intestines, liver and kidneys have occurred, but with the known fatal termination of these tumors when they have metastases, the risk of visceral damage is justified.

PROGNOSIS

For all practical purposes all neoplasms of the testicle are cancerous, with the prognosis for teratoid carcinomas poorer than that for seminomas. Simple castration by itself is not the therapeutic step of choice; in about 5 per cent of cases there is freedom from recurrence for more than five years. The radical operation in selected cases with experienced workers has given the highest percentage of relief. However, a large number of patients when seen have metastases and in these surgical treatment and radiation have resulted in a freedom from recurrence in a hopeful number of cases. Such cases may show tumor awakening and extension as late as ten years after therapy.

39. Dean, A. L., Jr.: New Methods of Irradiating Bladder Tumors, *J. Urol.* 41: 609, 1939.

40. Smith, G. G., Dresser, R., and Mintz, E. R.: Radiation Treatment of Tumors of the Testicle, *J. Urol.* 34: 462, 1935.

41. Hinman, F., and Powell, T. O.: The Management of Tumor of the Testicle, *J. A. M. A.* 110: 118, (Jan. 15) 1938.

42. MacKenzie, D. W., and Ratner, M.: Metastases from Tumors of the Testis, *J. Urol.* 41: 592, 1939.

Clinical Notes, Suggestions and New Instruments

AUREOMYCIN IN OCULAR INFECTIONS

A Preliminary Report

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In recent months, a mold belonging to the *Streptomyces* group has been isolated by workers¹ at the Lederle Laboratories, American Cyanamid Company. The antibiotic derived from this mold has been named "aureomycin," and numerous tests against gram-positive as well as against gram-negative organisms have strongly suggested that it might have an unusual degree of potency and range of activity. On the basis of information regarding the fundamental investigations² which the Lederle Laboratories provided us, it seemed desirable to test aureomycin in patients suffering with external diseases of the eye.

This new antibiotic has been used in 100 cases of ocular disease. For the most part, aureomycin was administered locally as a 0.5 per cent solution of a borate salt having a *pH* of 7.5 to 7.8 when dissolved in isotonic sodium chloride solution. The 0.5 per cent solution of the antibiotic was only mildly irritating to the noninflamed eye and was entirely nonirritating to the inflamed conjunctiva. The chemical properties of the drug will be described elsewhere, and this report is an attempt to evaluate its use as a local antibiotic. In a later study, the antibiotic activity of aureomycin will be compared with such other antibiotics as penicillin and streptomycin and with the locally administered sulfonamide drugs.

The borated solution is stable in the powder form but unstable in solution, although it retains most of its activity when kept at +4°C. In solution and at room temperature, the activity of the drug disappears in approximately twenty-four hours. Because of this rapid inactivation, it was felt that frequent use of the drug over a short period of time was the best method of application therefore, the majority of patients were treated for twenty-four to forty-eight hours. In a few instances a fresh supply of the antibiotic was furnished for use over a longer period. A few of the patients were given aureomycin hydrochloride intramuscularly in varying amounts, and the antibiotic in the doses used was entirely nontoxic to the patients.

The conjunctival sac of nearly all the patients was cultured for the presence of bacteria, and in some instances tissue culture and mice were inoculated in an effort to demonstrate the causative agent. In some of the patients it was not possible to determine the causative agent since several are unknown, such as vernal conjunctivitis and the Mooren's ulcer of the cornea.

STAPHYLOCOCCIC INFECTIONS

Of the patients treated, 56 had conjunctivitis produced by staphylococci either alone or combined with other organisms. Most of these patients had associated blepharitis and many had superficial punctate keratitis. The majority of patients with staphylococcal infection with associated blepharitis and keratitis were entirely healed within the first twelve to twenty-four hours. Many of the patients with staphylococcal conjunctivitis claimed to have had a remarkable effect within a matter of a few hours. Several of the patients were physicians who had had recurrent conjunctivitis for many years and who had become therapeutic nihilists. They were emphatically enthusiastic about the antibiotic and thought that the cure was even more rapid than with penicillin. No other form of treatment was

given to patients with staphylococcal conjunctivitis associated with blepharitis. No attempt was made to remove the crusts from the lid border except for culture purposes, and following the use of the drug for approximately twenty-four hours these crusts were stained yellowish. When the antibiotic therapy was discontinued, some of the patients had recurrences within thirty-six to seventy-two hours; however, if it could be replenished and used for two days, the number of recurrences decreased.

INFLUENZAL CONJUNCTIVITIS

Following the use of aureomycin in 4 cases of influenzal conjunctivitis, there were no recurrences. Recoveries occurred in less than twenty-four hours in all instances and were more rapid than with the usual form of therapy, since all the patients reported that there was no purulent discharge from the conjunctiva following the few applications of the antibiotic.

PNEUMOCOCCIC CONJUNCTIVITIS

Five patients with pneumococcal conjunctivitis were treated. After using aureomycin every hour for sixteen hours, they were entirely free of symptoms; there were no recurrences. As far as the clinical use of aureomycin is concerned, it was effective in pneumococcal conjunctivitis.

INCLUSION CONJUNCTIVITIS

Two patients with inclusion conjunctivitis have been treated with excellent results. The discharge, which had been profuse, was entirely gone within twelve hours, and the conjunctiva returned to normal within a week when "aureomycin" was used for forty-eight hours.

EPIDEMIC KERATOCONJUNCTIVITIS

Aureomycin was given to 13 patients in whom a positive diagnosis of epidemic keratoconjunctivitis could be made. Two patients were treated three days after the onset of symptoms,

Diseases Treated with Aureomycin and Number of Cases

Disease	No. of Cases
Staphylococcal conjunctivitis (necrosis and albus).....	56
Epidemic keratoconjunctivitis.....	13
Follicular conjunctivitis (unknown causation).....	9
Pneumococcal conjunctivitis.....	5
Influenzal conjunctivitis.....	4
Vernal conjunctivitis.....	4
Dendritic keratitis (herpes simplex).....	4
Inclusion conjunctivitis.....	2
Mooren's ulcer.....	2
Parinaud's conjunctivitis.....	1
Total.....	100

and both began to show immediate response. In 1 patient, S. G., the epidemic keratoconjunctivitis virus was isolated from a specimen obtained before treatment was started. She was treated with hourly drops and with 40 mg. intramuscularly, and the symptoms were entirely gone within a week. A few corneal opacities subsequently developed in each eye, but the clinical disease was shortened. Another patient, F. M., was given "aureomycin borate" locally, beginning on the third day of the disease. He was given a fresh supply every other day and used the antibiotic for two weeks. The acute phase of the disease was shortened, and after three weeks an occasional corneal opacity developed.

The majority of patients with epidemic keratoconjunctivitis were treated after the fifth day of the disease and received no beneficial effect. In none of these was the conjunctiva changed by continual application of the antibiotic. Three patients were treated after the disease had run its course, because of the presence of corneal opacities. Two of these patients were seen after the corneal opacities had developed and one when the conjunctivitis had begun to disappear, but blurring of vision due to edema of the cornea was severe. There is no effect from the antibiotic when treatment is started after the disease is established.

This paper was submitted for publication May 4, 1948.

From the Departments of Ophthalmology and Bacteriology, College of Physicians and Surgeons, Columbia University, New York.

1. Duggar, B. M., and Hesselstine, C. W.: Personal communication to the authors.

2. Wong, S. C., and Cox, H.: Personal communication to the authors.

DENDRITIC KERATITIS

Four patients with dendritic ulcers of the cornea have been treated. One patient gave a history of previous ulcers which had been dendritic in character, requiring cauterization. She was advised to return as soon as symptoms were noted. A foreign body sensation developed about six hours before her next examination. There was a typical dendritic figure in the lower part of the cornea with epithelial infiltration around the area of the ulcer. It was decided to use aureomycin locally for twenty-four hours, 1 drop at hourly intervals. The cornea was healed (except for one small area) in twenty-four hours, and forty-eight hours later the cornea was entirely clear. A child was admitted to the hospital for cautery of a dendritic ulcer and given aureomycin hourly overnight; by the time the patient was to go to the operating room for curettage of the ulcer, no ulcer could be observed. It is possible that both of these patients recovered spontaneously. The third patient was improved; the fourth showed little or no improvement following the prolonged use of aureomycin.

VERNAL CONJUNCTIVITIS

One patient with typical vernal conjunctivitis presented a large central corneal ulcer, the cause of which could not be determined. The ulcer healed promptly, and the patient observed that there was a decrease in the amount of itching and discharge as long as aureomycin therapy was continued. When treatment with the antibiotic was discontinued, there was a recurrence of itching and secretion. Because of this experience, 3 other patients with vernal conjunctivitis were treated with aureomycin borate. Two of these patients stated that they were relieved of symptoms as long as treatment with the antibiotic was continued, but the only objective difference was the lack of membrane on the conjunctiva. One patient with vernal conjunctivitis of some duration, who had received considerable roentgen therapy and in whom keratitis sicca subsequently developed, was unable to tolerate aureomycin locally.

ACUTE FOLLICULAR CONJUNCTIVITIS (CAUSE UNKNOWN)

There were 9 patients with acute follicular conjunctivitis treated with aureomycin. Studies of these patients failed to demonstrate a causative agent. All of the patients responded well to therapy, although some may have recovered spontaneously, and there were no recurrences. The period of morbidity was never beyond forty-eight hours.

PARINAUD'S CONJUNCTIVITIS

One patient with typical Parinaud's conjunctivitis was treated without beneficial effect. The normal progress of the disease was not shortened by the topical application of "aureomycin borate."

MOOREN'S ULCER

Two patients with marginal undermining advancing ulcers were treated. One had a typical Mooren's ulcer in one eye and was treated with penicillin, sulfonamide drugs, streptomycin and delimiting keratotomy, but the ulcer continued to extend, finally perforating, and the cornea became scarred. When the other eye became involved, the same treatment was instituted, but the ulcer was not controlled. Within forty-eight hours after local use of aureomycin there was no further extension of the ulcer, and the eye became clear; however, in spite of the continued use of aureomycin it was felt that the ulcer may have been extending and the treatment was discontinued.

The second patient had an atypical Mooren's ulcer that was a complete annular ulcer extending through the anterior two thirds of the cornea with an overhanging edge. The central area of the cornea was edematous and gray, and the ulcer in the second eye covered approximately two fifths of the lower part of the cornea. He was given penicillin locally and generally, and the cornea seemed to melt and the ulcer to extend. Scrapings were obtained from the margin of the ulcer and inoculated into tissue culture and subsequently into mice. He was then given intramuscular and local aureomycin therapy every hour. There was no further progression of the ulcer, and the one eye became white within a week. The eye in which there was decided edema of the central plug of the cornea became

moderately opaque, although the ulcer was controlled. The upper half of the cornea cleared, with the central area clearing as the upper half of the ulcer healed. The only opaque area remaining in the cornea was the lower half; this healed by pressure dressing. The vision improved from light perception to 20/50 in this eye and in the other eye from hand movements to 20/30. The tissue culture was contaminated with a gram-negative rod and staphylococci, and it was impossible to determine the exact cause of the ulcer.

COMMENT

Aureomycin appears to be an effective antibiotic agent against most of the gram-positive staphylococci. It seems to be at least as effective as penicillin when used locally. One disadvantage of its use in staphylococcal infections, particularly those associated with blepharitis, is that the solution is not present on the lid borders in very high concentration; if the crusts on the lid are stained yellow it is more effective. The use of the antibiotic in ointment form is being investigated. Another disadvantage of the compound when used in staphylococcal infections is recurrence, since the antibiotic is used for a short time. Recurrences, however, were no more frequent than with other antibiotics. Aureomycin is effective in all staphylococcal infections, provided that it can be used over a period of several days.

In influenzal conjunctivitis aureomycin produced excellent results, and it is much more effective than penicillin or the sulfonamide drugs. Within twenty-four hours the conjunctiva had returned to normal, and within a matter of hours the secretion was entirely absent.

Its effect when used locally in inclusion conjunctivitis is good; it seems to be more effective than the local use of sulfonamide drugs and as effective as the combination of oral and local treatment with sulfonamide drugs.

No patients with trachoma were treated in this series, but from previous experience it is anticipated that the antibiotic should be effective in this disease.

Use of the material in epidemic keratoconjunctivitis looks somewhat promising, although considerably more investigation will be necessary in order to determine its therapeutic effect. From the few patients treated, it would appear that the antibiotic may be effective during the first few days of the disease, but it will not prevent the development of a moderate number of corneal opacities. After the disease is established there is doubt that the antibiotic is effective. This is probably due to the fact that the virus is fixed in the tissue and aureomycin is not available to the cell in high enough concentration.

Its effectiveness in dendritic keratitis is inconclusive, although in this series 3 patients with clinical dendritic ulcers responded satisfactorily.

It is probable that the effect of aureomycin on vernal conjunctivitis is due entirely to the control of the secondary infection and not directly to the control of the cause of the conjunctivitis.

The solution was well tolerated by all of the patients; only occasionally did it produce irritation. Intramuscular injection of aureomycin hydrochloride is only slightly irritating and in the amounts used produces no changes in the blood picture or in the urine. No allergies and no toxic effects have been encountered.

CONCLUSIONS

1. Aureomycin borate in 0.5 to 1 per cent solution is non-irritating to the inflamed conjunctiva and only slightly irritating to the noninflamed conjunctiva.

2. Aureomycin borate is effective in 0.5 per cent concentration against staphylococci, pneumococci, influenza and inclusion conjunctivitis.

3. The antibiotic appears to be effective in cases of Mooren's ulcer and atypical Mooren's ulcer of unknown cause.

4. Aureomycin has some effect in epidemic keratoconjunctivitis, provided that treatment is started before the fourth day of the disease.

5. Aureomycin may be of value in dendritic keratitis.

6. Aureomycin is a valuable addition to our armamentarium of antibiotics.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following reports.

HOWARD A. CARTER, *Secretary*.

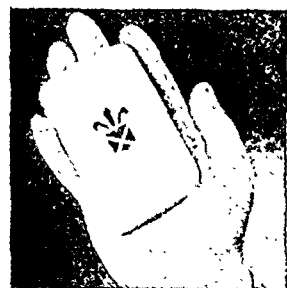
MEARS AUROPHONE HEARING AID MODEL 200 ACCEPTABLE

Manufacturer: Mears Radio Hearing Device Corp., 1 West Thirty-Fourth Street, New York 1.

Two forms of this hearing aid were submitted by the firm and subjected to adequate tests: (a) a model with crystal receiver, distinguished by a red grill cloth and (b) one with magnetic receiver, marked by a yellow grill cloth. The former model weighed 160 Gm. (5½ ounces); the latter 170 Gm. (5% ounces). The dimensions in each case were 110 by 18

by 68 mm. (4½ by ¾ by 2½ inches). Both are plastic-cased self-contained hearing aids, and in each a hinged bottom allows the entire front side to swing down to expose the batteries and instrument proper. The microphone is structurally isolated from the chassis by rubber band suspension. The receiver is connected to the instrument by a plastic-covered nonreversible cord with plugs at the ends.

For the A battery, each device requires two 1.5 volt dry cells



AuropHONE Model 200

of the zinc-carbon type in series; for the B battery, a 22.5 volt source.

1. *Crystal Receiver*.—The power consumption of this instrument was measured in an independent laboratory and was found to be 21 milliamperes at 2.9 volts for the A battery. For the B battery at 22 volts, the consumption was 0.29 milliamperes when quiet and 0.16 milliamperes in the presence of sound. Acoustical gain was also measured. The data here tabulated represent the decibel difference between the sound pressure at the face of the microphone of the instrument and the pressure produced by the receiver in a 2 cc. coupler. The pressure at the face of the microphone was held at approximately 60 decibels above zero for these measurements (60 decibels above 0.0002 dyne per square centimeter) and the volume control was set at "full." Readings were made at seven different frequencies and three settings of the tone control:

Tone		Frequencies						
		200	500	1,000	1,200	2,200	3,000	4,000
1	Noise	42	57	50	38	39	30	
2	Noise	28	49	43	33	33	25	
3	Noise	28	40	29	25	23	14	

The following are approximate values of maximum sound pressure levels (at three frequencies) in a 2 cc. coupler with the volume control set for full gain and the tone control set at position 1:

Frequency	Input Level	Maximum Output Level
600	90	126
1,000	90	140
2,600	90	132

Intelligibility tests were made with a person of normal hearing seated inside a booth giving about a 30 decibel sound reduction. The speaking person was outside the booth using

normal speaking voice. Score made with the Harvard no. 9 lists under these critical conditions was 95 per cent.

2. *Magnetic Receiver*.—The power consumption of this instrument was similarly measured and found to be 29 milliamperes at 2.9 volts for the A battery. For the B battery at 22 volts, the consumption was 0.49 milliamperes when quiet and 0.42 milliamperes in the presence of sound. Measurements of acoustical gain were made under the conditions described, with the following results:

Tone	200	500	1,000	1,200	2,200	3,000	4,000
1	39	50	52	55	41	53	40
2	Noise	30	42	46	36	49	36
3	Noise	30	42	46	36	49	32

The following are approximate values of maximum sound pressure levels, at three frequencies, in a 2 cc. coupler with the volume control set for full gain and the tone control set at position 1:

Frequency	Input Level	Maximum Output Level
600	90	132
1,000	90	132
1,300	85	132

Intelligibility tests were made with a person of normal hearing seated inside a booth giving about a 30 decibel sound reduction. The speaking person was outside the booth using normal speaking voice. Score made with the Harvard no. 9 lists under these critical conditions was 80 per cent.

The Council on Physical Medicine voted to include the Mears AuropHONE Hearing Aid, Model 200, with crystal and magnetic receivers, in its list of accepted devices.

MAICO D-9 AUDIOMETER ACCEPTABLE

Manufacturer: The Maico Company, Inc., North Third Street, Minneapolis 1.

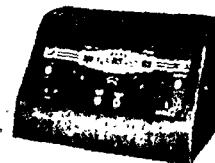
The Maico Audiometer, Model D-9, is a discrete frequency instrument designed to present pure tone stimuli at 64, 128, 256, 512, 1,024, 2,048, 2,896, 4,096, 5,792, 8,192 and 11,584 cycles per second for the clinical testing of hearing. In general arrangement it resembles the previously accepted Model D-5, which it is intended to supersede. The instrument is encased in a wood cabinet and has an inclined panel. Controls are clearly marked and arranged as in the D-5.

The audiometer weighs 11.3 Kg. (25 pounds) and measures 45.4 by 25 by 19.4 cm. (17½ by 9¾ by 7¾ inches). The carrying case weighs 6.8 Kg. (15 pounds) and measures 63 by 29 by 22 cm. (25 by 11½ by 8¾ inches).

The D-9 model is supplied with both air and bone conduction receivers, a signal switch for responses by the patient, a masking circuit that feeds a magnetic head phone, a speech circuit for communicating with severely hard of hearing patients and a headband for the various receivers.

The instrument was tested in two types of situation, one a clinic where routine audiometric tests were given to hard of hearing patients, and the other a field program for testing adults. In addition, measurements were made of air conduction thresholds yielded by normal ears, bone conduction thresholds for the same, aerial radiation from the bone receiver, efficiency of masking tone, properties of the attenuation system, wave form of signal and residual noise. Results of these tests indicated that the instrument was satisfactory in both types of situation.

The Council on Physical Medicine voted to include the Maico Audiometer, Model D-9, in its list of accepted devices.



Maico D-9 Audiometer

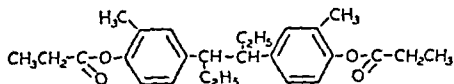
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

PROMETHESTROL DIPROPIONATE.—Meprane Dipropionate—Reed & Carnrick.—Dimethylhexestrol dipropionate. — 3,4-Bis-(*m*-methyl-*p*-propionyphenyl) hexane. — $C_{28}H_{38}O_4$.—M. W. 410.53.—The structural formula of promethestrol dipropionate may be represented as follows:



Actions and Uses.—Promethestrol Dipropionate is similar in its actions to diethylstilbestrol and other synthetic estrogens. It is used for the same conditions for which estrogenic substances are employed and the contraindications are those of the natural estrogens.

Dosage.—In the menopause, treatment may be started with 1 mg. given three times daily, gradually reducing the dosage to 1 mg. daily. For suppression of lactation, 3 to 5 mg. daily.

Tests and Standards.—

Promethestrol dipropionate occurs as a white, odorless crystalline powder, melting between 113 and 116 C. It is freely soluble in benzene, ether and ethyl acetate; slightly soluble in alcohol; and practically insoluble in water, dilute acids and dilute alkalis. A solution of promethestrol dipropionate in 90 per cent alcohol is neutral to litmus.

Dissolve about 10 mg. of promethestrol dipropionate in 1 cc. of sulfuric acid: an orange-red solution is obtained. Dilute (caution!) with 10 cc. of water: a pink, turbid solution is formed, which becomes white after standing for several minutes (distinction from benzestrol, diethylstilbestrol, ethyl estradiol, hexestrol and mestibol.)

Add 1 drop of ferric chloride T.S. to 2 cc. of a saturated solution of promethestrol dipropionate in diluted alcohol. The color is no different than that obtained by adding ferric chloride T.S. to the solvent (distinction from benzestrol, diethylstilbestrol, hexestrol and mestibol, which give a slight greenish-yellow color when the reagent is added).

Dry about 1 Gm. of promethestrol dipropionate, accurately weighed, in a vacuum desiccator over phosphorus pentoxide at room temperature for 24 hours; the loss in weight does not exceed 0.5 per cent.

Char about 0.5 Gm. of promethestrol dipropionate accurately weighed, over a low flame. Cool, then add 1 cc. of sulfuric acid and continue ignition until no carbon remains; no more than 0.05 per cent of residue results.

Place about 0.25 Gm. of promethestrol dipropionate, accurately weighed, in a 125 cc. Erlenmeyer flask containing 10 cc. of 0.5 N alcoholic sodium hydroxide. Reflux gently for 2 hours, cool and titrate the excess base with 0.1 N sulfuric acid, using phenolphthalein T.S. as indicator. The saponification equivalent (obtained by dividing the mass of promethestrol dipropionate used in milligrams by the number of cc. of 1 N sodium hydroxide consumed in the saponification) is not less than 203 nor more than 210.

Add about 75 cc. of water and 2 cc. of sulfuric acid to the samples used in determining the saponification number. Distill and collect about 50 cc. of the distillate. Titrate a 10 cc. portion (A) of the distillate with 0.01 N sodium hydroxide. Redistill the remaining 40 cc. of distillate, collecting three 10 cc. fractions (B, C, D). Titrate each fraction with 0.01 N sodium hydroxide. The Duclaux numbers 10B/A, 10C/A and 10D/A should be between 10 and 12.

Accurately weigh about 0.25 Gm. of promethestrol dipropionate, previously dried to constant weight over phosphorus pentoxide, and reflux this sample for 1 hour in 10 cc. of 15 per cent methanolic potassium hydroxide. Cool, add 100 cc. of water and quantitatively transfer the solution to a separatory funnel. Acidify with 10 per cent hydrochloric acid and extract with four 50 cc. portions of ether. Wash the combined ether extracts with three 100 cc. portions of 5 per cent sodium bicarbonate and with two 100 cc. portions of water. Filter the ether solution into a tared beaker, wash the funnel and filter paper once with ether and then evaporate slowly on a water bath to constant weight. The weight of 3,3'-dimethylhexestrol obtained in the previous assay is dissolved in 5 cc. of 5 per cent sodium hydroxide and 1 cc. of benzoyl chloride is added slowly with constant shaking. Continue shaking for 10 minutes after the addition of the benzoyl chloride and then add diluted ammonia solution until a distinct ammoniacal odor is present. Shake for an additional 10 minutes, remove the solid by filtration, wash several times with water and then with ethanol, and dry. The 3,3'-dimethylhexestrol dibenzoate obtained melts between 200 and 208 C.

PROMETHESTROL DIPROPIONATE TABLETS.—Accurately weigh a sufficient number of promethestrol dipropionate tablets to contain 50 mg. of the drug and grind them to a powder. Transfer an accurately weighed quantity of this powder, equivalent to about 20 mg. of the drug, to a 50 cc. glass-stoppered graduated cylinder. Extract the solid by shaking with four 20 cc. portions of ether. Allow the suspended material to

settle after each extraction. Decant the ether and filter into a tared beaker. Wash the filter paper with a 20 cc. portion of ether, collecting it in the same beaker as the extracts. Evaporate the combined filtrates and dry the residue to constant weight in a vacuum desiccator over phosphorus pentoxide. The quantity of 3,4-bis-(*m*-methyl-*p*-propionyphenyl)hexane is not less than 90 nor more than 110 per cent of the labeled amount.

The extracted material responds to the identification tests listed in the monograph on promethestrol dipropionate.

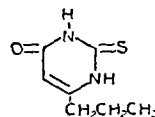
Small amounts of promethestrol dipropionate may be determined colorimetrically. A quantity of powdered tablet material sufficient to contain 1 mg. of the drug is weighed accurately and transferred to a 125 cc. Erlenmeyer flask containing 10 cc. of alcohol and three drops of sulfuric acid. Reflux the suspended material for 2 hours and quantitatively transfer the contents to a 100 cc. volumetric flask. Wash the Erlenmeyer flask with three 10 cc. portions of diluted alcohol and add the washings to the volumetric flask. Add 2 cc. of diluted hydrochloric acid and 4 cc. of molybdo-phosphotungstate T.S. and 20 cc. of water. Shake the mixture thoroughly and allow to stand for 10 minutes. Add 10 cc. of 25 per cent sodium carbonate (anhydrous) and dilute to 100 cc. with water. Shake and then allow the reaction mixture to stand for about 1 hour. Filter the solution and compare at 580 mμ with a standard and blank run simultaneously with the unknown.

REED & CARNICK, JERSEY CITY, N. J.

Tablets Meprane Dipropionate: 1 mg.

U. S. patent applied for.

PROPYLTHIOURACIL.—6-propyl-2-thiouracil.— $C_7H_{10}N_2OS$.—M. W. 170.226. The structural formula of propylthiouracil may be represented as follows:



Actions and Uses.—Propylthiouracil interferes with the formation of thyroxin by the thyroid gland. It is useful in the treatment of hyperthyroidism, thyrotoxicosis and thyroiditis. It is of no value and should not be used in other derangements of thyroid activity or in conditions not associated with hyperthyroidism.

Since propylthiouracil does not inactivate or interfere with the action of thyroxin already formed and stored in the gland, the effects of propylthiouracil medication do not appear until this store of thyroxin has been utilized. It may take several days to several weeks for the signs of decreased thyroid activity to become manifest, particularly if the patient has received previous iodine therapy.

Not all patients experience a permanent remission following propylthiouracil therapy, and the duration of treatment necessary to secure permanent relief from hyperthyroidism has not been determined. On the basis of the available information, it can be recommended only that propylthiouracil be used for pre-operative treatment or for those patients for whom operation is contraindicated. The wisdom of depending on propylthiouracil as a substitute for operative procedure can be determined only by following the results of investigations carried on for longer periods.

Propylthiouracil is capable of producing adverse reactions in some patients. The incidence and severity of these reactions are unpredictable, but they occur with less frequency than do those following medication with the parent compound, thiouracil. The severest complication of propylthiouracil therapy is granulocytopenia. Less severe reactions may include leukopenia, drug fever and dermatitis. The drug should be discontinued and appropriate therapy commenced immediately on the detection of signs of any of these complications.

Since the mild and the juvenile types of hyperthyroidism can frequently be controlled adequately by iodine therapy alone, propylthiouracil should not be used for these patients unless the safer form of therapy proves ineffective.

Dosage.—For severe cases of hyperthyroidism, initial doses of 50 mg. of propylthiouracil every eight hours appear to be effective in routine treatment, and 50 mg. twice daily in milder cases. Iodine should be administered for two or three weeks immediately before thyroidectomy.

The effective dosage of propylthiouracil should be continued until all signs and symptoms of the disease have been brought under control. Adequate maintenance dosage may best be established by determinations of the basal metabolic rate. Patients should be instructed to cease medication and report to their physician immediately if any adverse symptoms such as sore throat, fever, coryza or malaise are experienced.

Tests and Standards.—

Propylthiouracil occurs as a bitter, white, powdery, crystalline substance of starchlike appearance to the eye and to the touch. It melts sharply in the range of 218 to 220 C. It is sparingly soluble in alcohol,

slightly soluble in chloroform and ether, very slightly soluble in water and practically insoluble in benzene.

Add 1 cc. of strong ammonia solution to 25 mg. of propylthiouracil: complete solution occurs (25 mg. of thiouracil will not completely dissolve in 1 cc. of strong ammonia solution).

Slowly add bromine water to about 25 mg. of propylthiouracil in a test tube until complete solution is effected. Discharge the color with heat. Cool and add 10 cc. of barium hydroxide T. S.: a white precipitate forms (distinction from thiouracil, which yields a white precipitate that turns purple within a minute).

Dry 0.5 Gm. of propylthiouracil, accurately weighed, to constant weight at 100 C.: the loss in weight does not exceed 0.5 per cent.

Char about 0.5 Gm. of propylthiouracil, accurately weighed; cool, add a few drops of sulfuric acid to the cooled mass and ignite: the amount of residue is not more than 0.1 per cent.

Add 4 cc. of water and 1 cc. of silver nitrate T. S. to 0.5 Gm. of propylthiouracil in a test tube. Add 5 cc. of nitric acid and allow the solution to stand until the reaction is complete. Expel the oxides of nitrogen by heating; dilute with 10 cc. of water, and cool to room temperature: the turbidity does not exceed that of 0.1 cc. of fiftieth-normal hydrochloric acid used as a control (chlorides).

Heat 25 cc. of water containing 0.5 Gm. of propylthiouracil for ten minutes on a steam bath. Cool, filter and wash the filter paper; adjust the volume of the filtrate to 25 cc. with the washings. Add 1 cc. of barium chloride T. S. and 1 cc. of diluted hydrochloric acid: the turbidity does not exceed that of 0.1 cc. of fiftieth-normal sulfuric acid used as a control (sulfates).

Dissolve 1 Gm. of the propylthiouracil in sufficient sodium hydroxide T. S. to give complete solution, and dilute to 20 cc. with water. Add 5 drops of sodium sulfide T. S.: no more turbidity develops than corresponds to 20 parts per million of lead (U. S. P. XIII).

Weigh, accurately, about 0.5 Gm. of propylthiouracil and transfer to a 400 cc. beaker containing 100 cc. of neutralized alcohol. Add 5 drops of phenolphthalein T. S. Slowly titrate with tenth-normal sodium hydroxide, stirring constantly until complete solution is effected. Continue the titration to the first visible pink color. Each cubic centimeter of tenth-normal sodium hydroxide solution is equivalent to 0.01702 Gm. of propylthiouracil: the propylthiouracil content is not less than 95 nor more than 105 per cent.

PROPYLTHIOURACIL TABLETS: Weigh, accurately, 20 propylthiouracil tablets and grind them to a fine powder. Transfer about 400 mg., accurately weighed, to a 400 cc. beaker containing 100 cc. of neutralized ethyl alcohol. Add 5 drops of phenolphthalein T. S. Slowly titrate with tenth-normal sodium hydroxide, stirring constantly. Continue the titration to the first visible pink color. Each cubic centimeter of tenth-normal sodium hydroxide solution is equivalent to 0.01702 Gm. of propylthiouracil: the propylthiouracil content is not less than 93 nor more than 105 per cent of the claimed amount.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Propylthiouracil Tablets: 25 mg. and 50 mg.

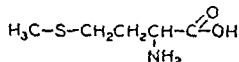
LEDERLE LABORATORIES DIVISION AMERICAN CYANAMIDE CO., PEARL RIVER, NEW YORK

Tablets Propylthiouracil: 50 mg.

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Tablets Propylthiouracil: 50 mg.

METHIONINE.—"Meonine"—Wyeth.—DL-Methionine.— γ -Methylthio- α -aminobutyric acid.— $C_4H_9NO_2S$.—M. W. 149.21.
—The structural formula for DL-Methionine may be represented as follows:



Actions and Uses.—Methionine is a sulfur containing amino acid which is considered to be an indispensable dietary component. It is available in synthetically prepared racemic form that may be administered in sufficient quantity to provide amounts equivalent to the biologically active levo form.

In animal experiments, certain deficient diets, especially those low in protein and high in fat, will cause liver damage in almost all animals, and, in addition, renal damage in some. That these pathological changes can be prevented by the addition to the diet of methionine alone is of great theoretical interest; similar protection can be obtained by casein, and doubtless by other common foodstuffs, as less rigorously restricted diets do not produce hepatic lesions.

Severe liver damage is regularly caused in protein depleted dogs by chloroform anesthesia and this is altogether prevented by methionine. Lean beef and other high protein diets are equally effective. A similar protective effect has been demonstrated against other hepatotoxic agents such as oxophenarsine in animal experiments.

The striking results of these animal experiments have led to the use of methionine in the treatment of liver disease in man, especially in hepatic cirrhosis, acute hepatitis and toxic hepatitis due to carbon tetrachloride and T.N.T. poisoning. In all these studies, methionine was used as a supplement to other standard methods of treatment such as high protein diet and vitamins. The improvement which sometimes follows cannot be attributed to the methionine alone.

There is at present no valid evidence that pure methionine is superior as a therapeutic agent to a high protein diet containing foodstuffs, such as casein and eggwhite, which contain methionine in large amounts. But because of its great theoretical

interest and in the hope that some special utility may be found, methionine has been accepted for experimental purposes only.

Of low toxicity, the use of methionine is not likely to be attended by any untoward effects.

Dosage.—As a supplement to a high protein diet, 3 to 6 Gm. daily is usually administered in tablet form. In severe cases 10 to 20 Gm. has been used. When oral administration is not feasible, crystalline methionine may be given in amounts of 5 to 10 Gm. daily by slow intravenous drip as a 3 per cent solution in Dextrose Injection, U. S. P., or Water for Injection, U. S. P., that has been further sterilized by autoclaving.

Tests and Standards.—

DL-Methionine occurs as white, crystalline platelets or a powder, having a faint odor. It is soluble in water, dilute acids and dilute alkalis; very slightly soluble in alcohol; and practically insoluble in ether. A 1 per cent aqueous solution of DL-methionine exhibits a pH in the range 5.6-6.1, and is optically inactive.

Dissolve 4.5 Gm. of DL-methionine in 150 cc. of water. The solution is clear and colorless. To 25 cc. of this solution add 1 cc. of diluted hydrochloric acid and 2 cc. of barium chloride T. S. The turbidity is less than that shown by 0.4 cc. of 0.02 N sulfuric acid diluted to 25 cc., and treated in a similar manner (sulfate). To another 25 cc. portion add 1 cc. of nitric acid and 1 cc. of silver nitrate T. S. The turbidity is not more than that obtained when 0.2 cc. of 0.02 N hydrochloric acid is diluted to 25 cc., and treated in the same manner (chloride). Add 1 cc. of 1 N sodium hydroxide and 1 drop of Nessler's reagent T. S. to 25 cc. of the DL-methionine solution: the color developed is less than that produced by 25 cc. of a solution containing 0.0125 mg. of ammonium chloride (ammonium salts). Add 1 cc. of 4 N hydrochloric acid to 25 cc. of the solution and then add 10 cc. of hydrogen sulfide T. S. The color produced is less than that obtained when 1.5 cc. of standard lead solution (U. S. P. XIII) is diluted to 25 cc., acidified and treated with hydrogen sulfide T. S. (heavy metals). To the solution containing DL-methionine, used in the test for heavy metals, add 2 cc. of ammonia T. S.: the green color obtained is no darker than that produced by treating the blank from the heavy metals test with 1 cc. of ferric chloride solution containing about 0.05 mg. iron (made by diluting 1 cc. of ferric chloride colorimetric solution, U. S. P. XIII, to 200 cc.), mixing, and adding 2 cc. of ammonia T. S.

Add about 25 mg. of dry DL-methionine to about 1 cc. of saturated solution of anhydrous copper sulfate in sulfuric acid: the appearance of a yellow color indicates methionine.

Dissolve about 5 mg. of DL-methionine in 5 cc. of water and then add in succession, shaking after each addition, 1 cc. of 5 N sodium hydroxide, 1 cc. of 1 per cent glycine, and 0.3 cc. of 10 per cent sodium nitroprusside (freshly prepared). Keep at 35-40 C. for 10 minutes, and then cool in an ice-bath for 2 minutes. Add 2 cc. of 20 per cent hydrochloric acid and shake the mixture: the appearance of a reddish-purple color indicates methionine.

Dry about 1.5 Gm. of DL-methionine, accurately weighed, at 100 C. for 4 hours: the loss in weight does not exceed 0.5 per cent.

Char about 1 Gm. of DL-methionine, accurately weighed, over a low flame. Cool, add 1 cc. of sulfuric acid and continue ignition until no carbon remains: the residue does not exceed 0.05 per cent.

Transfer about 0.1 Gm. of dry DL-methionine, accurately weighed, to a semi-micro Kjeldahl flask and digest with 5 cc. of sulfuric acid, 2 Gm. of potassium sulfate, 0.2 Gm. of copper sulfate and 1 cc. of 30 per cent hydrogen peroxide. Dilute the clear solution to 10 cc., make alkaline with 40 per cent sodium hydroxide, and distill the ammonia into 50 cc. of 0.02 N sulfuric acid. Titrate the excess acid with 0.02 N sodium hydroxide, using methyl red T. S. as an indicator: the nitrogen content is not less than 9.2 nor more than 9.5 per cent.

Weigh, accurately, about 0.3 Gm. of DL-methionine, transfer quantitatively to a 100 cc. volumetric flask and fill to the mark with distilled water. Transfer a 5 cc. portion of the solution to an Erlenmeyer flask and add 2 cc. of phosphate buffer (7 volumes of 1 M KH_2PO_4 and 3 volumes of 1 M K_2HPO_4) and 2 cc. of iodine solution, approximately 0.1 N. Permit the mixture to stand for about 15 minutes and then remove the excess iodine with 0.1 M sodium thiosulfate solution, using starch-potassium iodide T. S. as an indicator. Add 2.5 cc. of 2 N hydrochloric acid and titrate the iodine liberated with 0.025 N sodium thiosulfate. Perform a blank determination on 5 cc. of the DL-methionine solution as follows: add 1 cc. of 6 N hydrochloric acid and enough 0.1 M potassium iodate solution to give a persistent yellow color. Allow the solution to stand for about 15 minutes and then add 1 cc. of 5 N potassium iodide solution. Add about one-half the sodium hydroxide needed for neutralization (3 cc. of 1 N) followed by a mixture of the remainder of the sodium hydroxide and 3 cc. of the phosphate buffer. Add 2 cc. of 5 N potassium iodide solution and allow to stand for 10 minutes. Remove the excess iodine with 0.1 M sodium thiosulfate solution, add 2 cc. of 2 N hydrochloric acid and titrate the iodine liberated. Subtract the amount of thiosulfate used in the blank from that used in the determination: 1 cc. of 0.025 N sodium thiosulfate is equivalent to 0.001865 Gm. of methionine. The percentage of methionine should be not less than 98.5 nor more than 101 per cent.

TABLETS: The pulverized tablets respond to the identification tests and assay described in the monograph on DL-Methionine. Each tablet should contain not less than 95 nor more than 105 per cent of the claimed amount of DL-methionine.

WYETH INCORPORATED, PHILADELPHIA

Crystalline Meonine (Powder): 50 Gm. bottles.

Tablets Meonine: 0.5 Gm.

U. S. trademark 406,590.

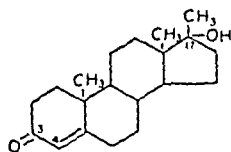
SODIUM ASCORBATE INJECTION U. S. P. (See New and Nonofficial Remedies 1947, p. 520).

The following dosage form has been accepted:

THE CENTRAL PHARMACAL CO., SEYMOUR, IND.

Solution Sodium Ascorbate: 100 mg. per cc., 10 cc. vials.

METHYLTESTOSTERONE.—U. S. P.—17-Methyltestosterone.—17-methyl- Δ^1 -androstene-17-(a)-ol-3-one, $C_{28}H_{48}O_2$.—M. W. 302.44. The structural formula of methyltestosterone may be represented as follows:



For description and standards see the U. S. Pharmacopeia under Methyltestosterone and Methyltestosterone Tablets.

Actions and Uses.—Methyltestosterone may be given orally in the treatment of gonadal failure in the male. Its actions and uses are qualitatively the same as those for testosterone propionate.

Dosage.—The dosage and duration of methyltestosterone therapy vary considerably, depending on the condition, its severity, previous androgenic administration and individual variation. It is usually preferable to begin therapy with a low dose, about 5 mg. daily, increasing to 10 mg. or 15 mg. if higher doses appear indicated.

RAHE CHEMICALS, INC., HARRISON, N. J.

Tablets Methyltestosterone: 10 mg. and 20 mg.

ALUMINUM HYDROXIDE GEL (See New and Non-official Remedies 1947, p. 315).

The following dosage has been accepted:

WM. R. RORER, INC., PHILADELPHIA

Tablets Dried Aluminum Hydroxide Gel (Flavored): 0.3 Gm.

CHORIONIC GONADOTROPIN (See New and Non-official Remedies 1947, p. 374).

The following dosage form has been accepted:

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Entromone (Powder): 5,000 I. U. and 10,000 I. U., 10 cc. vials. Powdered preparations of chorionic gonadotropin, which when diluted with 9 cc. of the accompanying isotonic solution of sodium chloride and preserved with phenol 0.4 per cent, provides solutions having a potency of 500 or 1,000 international units per cc. respectively.

U. S. patent 1,910,298; U. S. trademark 354,550.

DIENESTROL (See THE JOURNAL, Nov. 22, 1947, p. 773).

The following additional dosage form has been accepted:

WHITE LABORATORIES, INC., NEWARK, N. J.

Aqueous Suspension Dienestrol: 5 mg. per cc., 10 cc. vials. Preserved with chlorobutanol 0.5 per cent.

U. S. patent applied for.

ESTROGENIC SUBSTANCES (WATER INSOLUBLE) (See New and Nonofficial Remedies 1947, p. 343).

The following dosage forms have been accepted:

BIORGANIC LABORATORIES, INC., BROOKLYN

Estrogenic Substances: Bulk.

ENDO PRODUCTS, INC., RICHMOND HILL, N. Y.

Aqueous Suspension Estromone: 20,000 I. U. per cc., 10 cc. vials.

THE NATIONAL DRUG CO., PHILADELPHIA

Solution Estronate in Oil: 5,000 I. U. per cc. in corn oil, 10 cc. Injectosols; 10,000 I. U. per cc. in corn oil, 1 cc. ampuls, 10 cc. and 25 cc. Injectosols; and 20,000 I. U. per cc. in corn oil, 10 cc. and 25 cc. Injectosols. Preserved with chlorobutanol 0.5%.

PROCAINE HYDROCHLORIDE (See New and Non-official Remedies, 1947, p. 57).

The following dosage form has been accepted:

LINCOLN LABORATORIES, INC., DECATUR, ILL.

Solution Procaine Hydrochloride 2%: 100 cc. vial. Each cubic centimeter contains procaine hydrochloride 2 per cent in distilled water. Preserved with chlorobutanol 0.5 per cent.

MEPERIDINE HYDROCHLORIDE (See New and Nonofficial Remedies 1947, p. 28).

The following additional dosage form has been accepted:

WINTHIROP-STEARNES, INC., NEW YORK

Tablets Demerol Hydrochloride: 100 mg.

PERTUSSIS VACCINE (See New and Nonofficial Remedies 1947, p. 457).

The following dosage form has been accepted:

CUTTER LABORATORIES, BERKELEY, CALIF.

Pertussis Vaccine: 20,000 million *H. pertussis* per cc., 5 cc., 20 cc. and 50 cc. vials; and 40,000 million *H. pertussis* per cc., 2.5 cc., 10 cc. and 25 cc. vials. Preserved with sodium ethyl mercuri thiosalicylate 1:10,000 and phenol 0.25 per cent.

PENICILLIN (See New and Nonofficial Remedies 1947, p. 144).

The following dosage forms have been accepted:

E. R. SQUIBB & SONS, NEW YORK

Crystalline Procaine Penicillin G in Oil: 300,000 units in peanut oil, 1 cc. and 10 cc. vials suspended with 2% aluminum monostearate; 1 cc. double-cell cartridges with Aspiring Test Solution preserved with chlorobutanol 0.5 per cent in packages of five cartridges; 1 cartridge with disposable syringe and needle and 1 cartridge with sterile hypodermic needle alone for use with metal B-D cartridge syringe assembly.

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Crystalline Penicillin G Potassium: 100,000, 200,000, 500,000 and 1,000,000 unit vials.

BIO-RAMO DRUG COMPANY, BALTIMORE

Penicillin Calcium in Oil and Wax: 300,000 units per cc., 10 cc. vials.

PREMO PHARMACEUTICAL LABORATORIES, NEW YORK

Crystalline Procaine Penicillin G in Oil: 300,000 units per cc., in sesame oil, 10 cc. vials.

HUMAN SERUM IMMUNE GLOBULIN.—The gamma globulin fraction of normal adult human plasma. The finished product contains 16.5% of gamma globulin and complies with the minimum requirements of the National Institute of Health and as prepared by an acceptable method.

Actions and Uses.—For modification or complete protection against measles.

Dosage.—The volume of the dose per pound of body weight is 0.02-0.025 cc. for modification and at least 0.1 cc. for prevention when the product contains 150 mg. of gamma globulin per cc.

CUTTER LABORATORIES, BERKELEY, CALIF.

Immune Serum Globulin (Human): 2 cc. vials. Preserved with sodium ethyl mercuri thiosalicylate 1:10,000.

Licensed by Research Corporation. U. S. patent No. 2,390,074.

POISON IVY-SUMACH EXTRACT.—A solution of the combined resin extracted from the fresh leaves of *Rhus toxicodendron* rodicon and *Rhus toxicodendron* vernix.

Actions and Uses.—Poison Ivy-Sumach Extract is used for prevention of the symptoms of the dermatitis produced through contact with *Rhus toxicodendron* rodicon and *Rhus toxicodendron* vernix.

Dosage.—Three injections of 0.1 cc., 0.2 cc. and 0.4 cc. on successive days.

BARRY LABORATORIES, INC., ALLERGY PRODUCTS DIVISION, DETROIT

Poison Ivy-Sumac Extract: Packages of four vials each containing 0.7 cc. of concentrated extract and three vials each containing 0.9 cc. diluent; also in 15 cc. vials of concentrated extract. The diluent contains 0.5% procaine hydrochloride, and is preserved with 0.4% chlorobutanol in physiologic solution of sodium chloride.

Preparation.—

The oily substance which is extracted with suitable solvents from the fresh leaves of *Rhus toxicodendron* rodicon and *Rhus toxicodendron* vernix is purified and decolorized. The resultant oily resin is dissolved in alcohol and standardized to represent a 1:500 dilution.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 9, 1948

CHLOROMYCETIN

From a soil sample collected in a mulched field near Caracas, Venezuela, Burkholder¹ of Yale University isolated a new strain of *Streptomyces*. Agar streak cultures of this organism were found to inhibit adjacent inoculums of a wide variety of gram-positive and gram-negative micro-organisms, including: *Bacillus subtilis*, *S. aureus*, *Brucella abortus*, *Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella schottmuelleri* and *Shigella paradysenteriae*. When the Burkholder *Streptomyces* was grown in shaken flasks of liquid mediums, filtrates proved to possess antibacterial activity in broth dilutions against the same micro-organisms. From these filtrates a crystalline product was isolated, which was named "chloromycetin."

This crystalline material inhibits the growth of a wide range of gram-positive and gram-negative bacteria when tested in dilutions as high as 0.35 microgram per cubic centimeter. This is a higher effective dilution than that of the earlier antibiotics. Of particular interest was his observation that chloromycetin when injected into chick embryos shows chemotherapeutic activity against several rickettsial and virus diseases. Similar therapeutic results were noted in infected mice. Moreover, in contrast with streptomycin, chloromycetin is rapidly absorbed from the gastrointestinal tract of laboratory animals, and is apparently nontoxic even when given intravenously in massive doses.

More detailed studies of the therapeutic effects of this new antibiotic were undertaken by Smadel and Jackson² of the Army Medical Center, Washington, D. C. Initial tests were performed with groups of twenty-four 7 day embryonated eggs, infected by the yolk sac route with *Rickettsia orientalis*, *Rickettsia prowazeki*, *Rickettsia mooseri* or *Dermacentroxenus rickettsi*. Eggs were examined daily and the time of death noted. All untreated control eggs died of the infection. It was found that as little as 0.125 mg. chloromycetin given at the time of infection would definitely prolong life. Doses as large as 1 mg. per

egg would reduce the mortality by at least 65 per cent. Sixteen of the 24 treated eggs survived to the fifteenth day after infection, and 8 hatched normally. Similar therapeutic effects were recorded with embryonated eggs infected with psittacosis virus, variola virus or influenza A virus.

Similar therapeutic effects were noted in mice infected with scrub typhus. Daily intraperitoneal injections of as little as 0.1 mg. per mouse, started one day after infection, reduced the mortality by 62.5 per cent, while 1.5 mg. doses similarly given reduced the mortality to zero. With a 2.5 mg. intraperitoneal dose, the treatment could be delayed for five to eight days and still be equally effective. If delayed till the tenth day this intraperitoneal dose would save but 60 per cent of the infected mice. By doubling the dosage chloromycetin was equally effective if given orally. Chloromycetin was equally effective with mice infected with Japanese encephalitis.

So far as noninfected control mice and embryonated eggs which received the maximum doses of chloromycetin remain unaffected, the new antibiotic is apparently without appreciable toxicity. On account of this apparently low toxicity, the ready absorption of chloromycetin from the alimentary tract and its beneficial effects when given relatively late in experimental disease, Smadel and his associates suggested that chloromycetin might be of value in human medicine.

As a preliminary to a proposed study of its therapeutic value, Smadel³ and his associates administered single or repeated oral doses to a group of physician volunteers. After a single dose of 2 Gm. appreciable amounts of the drug were demonstrable within thirty minutes in both blood and urine. The titers decreased to zero by the end of eight hours. From this rapid elimination of the drug frequent oral administration is indicated in order to maintain the antibiotic at an appreciable level in the blood stream. With a 1 Gm. initial dose followed by 0.2 Gm. doses every four hours, the antibiotic can be maintained at an effective level in the blood. Approximately 10 per cent of the total amount thus given was recovered in active form from the urine. Toxic effects were not observed by the volunteer physicians during or after such administration.

After this preliminary work on normal volunteers a group of 5 patients with typhus were treated with the same oral doses.⁴ The diagnosis was confirmed by positive Weil-Felix and specific rickettsial agglutination reactions. Treatment was begun between the fifth and the eighth day of the disease. At this time three of the patients exhibited a high grade fever, high pulse rate and a plus 2 to plus 3 rash. One patient was in delirium. Each patient was given an initial oral dose of 1 to 2 Gm. chloromycetin, followed by a 0.2 Gm. oral dose every four hours. In all cases there was a

1. Ehrlich, J.; Bartz, Q. R.; Smith, R. M.; Joslyn, D. A., and Burkholder, P. R.: *Science* **106**: 417, 1947.
2. Smadel, J. E., and Jackson, E. B.: *Science* **106**: 418, 1947.

3. Ley, H. L.; Smadel, J. E., and Crocker, J. T.: *Proc. Soc. Exper. Biol. & Med.* **68**: 9 (May) 1948.

4. Smadel, J. E.; Leon, A. P.; Ley, H. L., and Varela, G.: *Proc. Soc. Exper. Biol. & Med.* **68**: 12, 1948.

rapid fall in pulse rate and body temperature. The delirium disappeared within three days. The rash disappeared within three to five days. Toxic reactions were not noted.

Comparison was made with an equal number of patients with typhus not treated with the new antibiotic. On the basis of these limited comparisons Smadel and his associates concluded that the administration of chloromycetin to patients with typhus is a safe procedure and that the therapeutic effects are sufficiently encouraging to warrant further tests of the drug with rickettsial and virus diseases.

More extensive tests of this drug were made by the Malaya Institute of Medical Research, during the recent outbreak of scrub typhus at Kuala Lumpur.⁵ Twenty-five hospitalized patients were treated with chloromycetin, while 12 untreated hospitalized patients served as controls. Treatment was begun on an average 6.2 days after the onset of the infection. All treated patients became afebrile within an average of thirty hours after the initial dose. The untreated patients remained febrile for an average of eighteen days. Rickettsemia disappeared within twenty-four hours after the initial dose, and the rash within forty-eight hours. All treated patients were discharged from the hospital on an average of thirteen days after beginning the treatment. The untreated controls remained on an average for 30.7 days after onset. No complications or deaths were noted with the 25 treated patients. Among the 12 untreated controls, in 2 complications developed (parotitis, pneumonia), and 1 died.

According to the daily press even more spectacular therapeutic effects were afterward obtained during an outbreak of epidemic typhus in Bolivia. Details are not yet reported.

THE AERO MEDICAL ASSOCIATION

The Aero Medical Association met at Royal York Hotel and R. C. A. F. Institute of Aviation Medicine, Toronto, Canada, June 16-18, 1948. Among the papers presented that of E. E. Poos, Detroit, pointed out that certain ocular symptoms, such as blurring, burning, light flashes, photophobia, vertigo, amaurosis fugax, disturbances of muscles, accommodation, convergence, migraine, glaucoma and central angiospastic retinopathy are frequently of psychosomatic origin, reflecting ocular symptoms of certain conversion syndromes. Among these may be mentioned guilt, conflict, fear, pain, indecisiveness, feelings of inferiority and fatigue reactions.

Ryan and his associates at the R. C. A. F. Institute of Aviation Medicine, Toronto, reported physiologic findings in normal men subjected to negative G.¹ The

outstanding symptoms under negative G and the limiting symptom by which the subject decides that his safe G tolerance is reached is pressure in the head region. Visual symptoms commonly include blurring, graying and more specifically reddening of vision. The pulse rate decreases under negative G and the greater the negative G the more pronounced the bradycardia. The pulse rate quickly increases again as the negative G decreases. On repeated negative tilts on six successive days men acquired a subjective tolerance for negative G, and the average pulse rate on the last negative tilts was significantly lower than on the first, suggesting a physiologic adaptation as the basis of this increased tolerance. A similar acquired tolerance was experienced on repeated exposures to the higher negative G values studied. Despite the absence of subjective cardiac symptoms, electrocardiograms from precordial leads showed increasing deviations from the normal with increasing negative G. These consisted of arrhythmias, prolonged P-R intervals, auriculoventricular heart block and bizarre QRS complexes, but most strikingly of periods of cardiac asystole (up to nine seconds' duration). Under the experimental conditions used it was demonstrated that healthy young men can with safety withstand 3 G negative for five seconds.

J. C. Douglas, of the University of Western Ontario, London, Canada, reported studies on pulmonary function with the use of the Milliken oximeter. He found that in normal subjects an alveolar oxygen tension of approximately 210 mm. of mercury produces complete saturation. This corresponds roughly to 35 per cent oxygen in the inspired air. The time to reach saturation is about forty seconds. In subjects with pulmonary dysfunction, significant differences in respect to both these measurements have been found. Henry and his associates at the Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio, studied the effect of breathing high pressures on the circulation. The main effects were (1) the loss of plasma filtrate into the tissues and (2) pooling of blood with diminished venous return. Loss of fluid was estimated by means of hematocrit and hemoglobin determinations, and venous pooling by two methods: (1) a modification of the Evan's blue blood volume technic and (2) a water displacement plethysmograph. An immediate (first four minutes) effect of pressure breathing is pooling of approximately 7 per cent of total blood volume. A further loss of 10 per cent results from plasma filtration during a thirty minute period, making a total of approximately 15 to 20 per cent of total blood volume lost from effective circulation.

Haymaker and his co-workers reported on pathologic changes believed to have been due to hypoxia in 75 fatal cases of high altitude hypoxia. The pathologic changes were divided into three categories: (1) vascular phenomena including congestion, edema and hemorrhage; (2) vacuolar changes, with and without inclusion bodies, in parenchymal cells of various internal organs.

5. Smadel, J. E.; Woodward, T. E.; Ley, H. L., Jr.; Philips, C. B.; Traub, R.; Lewthwaite, R., and Savoor, S. R.: *Science* **108**: 160, 1948.

1. The terms "positive and negative G" are arbitrary ones used to designate the direction in which the G force is acting in relationship to the longitudinal axis of a human being. Positive "G" refers to "G" acting on the body in a direction from head to foot, while negative "G" refers to "G" acting in a direction from foot to head. The common sources of "G" are gravity, from which the term "G" is derived, and centrifugal force such as is encountered in flying.

and (3) reactive and degenerative changes in the central nervous system.

F. G. Hall, Duke University, Durham, N. C., presented an interesting study of various factors which affect the time interval between loss of oxygen and loss of useful consciousness in persons at simulated high altitudes. Factors investigated were barometric pressure, pulmonary ventilation, breathing pattern and composition of the blood. Striking differences occurred between individuals in useful consciousness times which appeared consistent from day to day but do not correlate with any factors so far studied. Smith and Law of University of Toronto made an interesting suggestion for meeting the emergency of sudden decompression of a pressurized passenger transport when flying at high altitude. The proposed method of meeting the emergency is to flood the cabin with oxygen gas, obtained by spraying liquid oxygen against a suitable evaporating surface. The weight of liquid oxygen required has been calculated, and is no greater than that of an emergency oxygen gas system. A safe breathing atmosphere can be produced within two minutes at 40,000 feet. If the aircraft promptly starts to descend, safety can be maintained in spite of a large outward leak.

W. R. Stovall, Civil Aeronautical Administration, Washington, D. C., stressed the responsibility of flight surgeons in the selection, welfare, health and safety of all flight personnel. The rapid growth of aeronautics calls for more flight surgeons; yet the number of surgeons is diminishing. Approximately 500 flight surgeons in the armed services, together with reservists in civilian practice, constitute the national pool. Several suggestions were made with the view of maintaining or increasing this pool.

Current Comment

"ANTIVIVISECTIONISTS HAVE NO VALID ARGUMENTS"

As predicted¹ when the antivivisectionists were exposed by the *Saturday Evening Post*,² the latter magazine was deluged with mail, some of which was commendatory, and some condemnatory. One antivivisectionist went so far as to threaten to use his rifle on experimenters. The *Post* publishes two columns of letters *pro* and *con*; one demands: "Answer yes or no. Are you or are you not going to print the other side of the vivisection question?" The following answer of the editors of the *Post* to this demand is significant: "We made an exhaustive study of the pros and cons of vivisection before we published 'They're Trifling with Your Life.' Not one valid argument in support of the antivivisectionist viewpoint was found. This being the case, we feel no obligation to publish anything more

than the comments in these columns."³ This ought to settle the antivivisectionist argument, but it will not. The antivivisectionists are not capable of being convinced, and continued vigilance by physicians and other scientists will be necessary. The antivivisectionists need constant watching even though they have not thus far achieved important legislative results.

ORIGIN OF PILONIDAL SINUS

A theory that most pilonidal sinuses are acquired infective and foreign body granulomatous reactions to buried hair rather than developmental malformations was recently proposed by Patey and Scarff.¹ They point out serious defects in the evidence for the developmental theory. A few sacrococcygeal dermoid cysts which are apparently developmental in origin unquestionably occur. They are located between the rectum and the coccyx; they are first noted in early life, and they are rarely infected. Pilonidal sinuses, on the other hand, are found chiefly in the intergluteal cleft; they first appear in young life, and they are almost invariably infected. About half of them contain hair; many have no epithelial lining; few show hair follicles in their walls, and fewer still show sebaceous glands. In the absence of these structures, there is no evidence for origin from dermoid. Postoperative recurrences may contain hair, yet have no epithelial cells. They may be so large that they could not have been left behind by an incomplete operation; they must have enlarged, probably under the influence of the hairs. The number of recurrences appears to be reduced by postoperative roentgen treatment. The suggestion is made that the role of such therapy may be to destroy the hair follicles. Finally, Patey and Scarff describe 3 examples of pilonidal sinus in the hands of barbers. These sinuses, except for their shorter length, resembled those in the postanal region. They contained hair which had apparently penetrated through the skin and set up a foreign body reaction, and there was no suspicion of preexisting dermoid. The authors suggest that a similar process might produce postanal pilonidal sinuses. The deeper penetration of the hair in both locations is attributed to the sucking action of negative pressures produced by passive motion of the adjacent tissues. This new theory is more attractive for explaining the pathogenesis of the pilonidal sinuses of the hand than of those in the postanal region. In the former, the hairs found in the sinus are short—a few millimeters. In the latter, they may be several centimeters long, indicating that they have grown. Therefore, they were attached and not free to migrate. The high incidence of a dimple in the postanal region of children at the location where the pilonidal sinus later develops indicates the presence of at least one type of malformation in these cases; so, presumably, there could be another. Finally, it is not clear why hair should penetrate and set up pilonidal sinuses only in the hand and the postanal region.

3. Letters to the Editor; *Sat. Eve. Post* 221:4 (Aug. 28) 1948.

1. Antivivisectionists Exposed, Editorial, *J. A. M. A.* 138:132 (Sept. 11) 1948.

2. Moon, V. H., and Wittels, D. G.: *They're Trifling with Your Life*, *Sat. Eve. Post* 221:16 (July 24) 1948.

1. Patey, D. H., and Scarff, R. W.: Pathology of Postanal Pilonidal Sinus: Its Bearing on Treatment, *Lancet* 2:484 (Oct. 5) 1946; Pilonidal Sinus in a Barber's Hand with Observations on Postanal Pilonidal Sinus, *ibid.* 2:13 (July 3) 1948.

ORGANIZATION SECTION

World Medical Association

Second General Assembly, Geneva, Sept. 8-11, 1948

The World Medical Association held its Second General Assembly in Geneva, September 8 to 11. This important association includes practically all of the national medical organizations, thus constituting a world organization of physicians. The association aims to elevate medical ethics and the standard of medical education throughout the world. It hopes to defend the status of the physician against encroachment by the state, and to perfect medical organization and to make it more effective.

The 1948 General Assembly was to meet in Prague under the presidency of Professor Jaroslav Stuchlik. Recent political events in Czechoslovakia resulted in the dissolution of the Czechoslovakian Medical Association and in resignation of Dr. Stuchlik.

The General Assembly was opened on September 8 by M. Picot, President of the National Swiss Council. Dr. Routley of Canada, chairman of the Council of the World Medical Association, proposed that Professor Eugene Marquis of France be president of the association for the year 1948-1949.

Unified Medical Diploma

Several months ago Dr. L. H. Bauer (United States), general secretary, sent an inquiry to various national medical associations requesting their views concerning the establishment of a medical diploma which would be recognized in all of the countries of the world. This proposition was originated by Dr. Guy Dain of Great Britain. The majority of the countries felt that the idea was excellent but not practical. The assembly voted to abandon Dr. Dain's proposition.

The War Crimes of the German Doctors

At the previous assembly in Paris the World Medical Association solemnly condemned the crimes and the inhuman acts committed by the German physicians, and invited them to make a declaration which would recognize that a number of their colleagues "have violated the ethical traditions of medicine, defiled the professional medical honor and prostituted medical science by placing it at the service of war and political hatred." There is not now in Germany any national medical organization that could speak for the physicians of Germany.

The Hippocratic Oath

The inhuman acts perpetrated by certain physicians testified to the regrettable lowering of medical ethics. The World Medical Association believes that reestablishment of the original Hippocratic Oath or of its modern version to be read by the doctor on the receipt of his diploma would aid in impressing on him the fundamental principles of medical ethics and would tend to elevate the general level of professional practice. Dr. Cibrie (France) presented a convincing argument in favor of adoption of a modern version of the Oath. On motion of Dr. Pridham (England), seconded by the Danish delegate, the General Assembly adopted a motion that the name of the city of Geneva be included in the official text of the modified Hippocratic Oath. Following is the text of the Oath in French as formulated in Geneva with a proposed English text:

SERMENT D'HIPPOCRATE, FORMULE DE GENÈVE

Au moment d'être admis au nombre des membres de la profession médicale, je prends l'engagement solennel de consacrer ma vie au service de l'humanité.

Je garderai à mes maîtres le respect et la reconnaissance qui leur sont dus.

J'exercerai mon art avec conscience et dignité.

Je considérerai la santé de mon patient comme mon premier souci.

Je respecterai le secret de celui qui se sera confié à moi.

Je maintiendrai, dans toute la mesure de mes moyens, l'honneur et les nobles traditions de la profession médicale.

Mes collègues seront mes frères.

Je ne permettrai pas que des considérations de religion, de nation, de race, de parti ou de classe sociale viennent s'interposer entre mon devoir et mon patient.

Je garderai le respect absolu de la vie humaine, dès la conception.

Même sous la menace, je n'admettrai pas de faire usage de mes connaissances médicales contre les lois de l'humanité.

Je fais ces promesses solennellement, librement, sur l'honneur.

THE HIPPOCRATIC OATH FORMULATED AT GENEVA

Now being admitted to the profession of medicine I solemnly pledge to consecrate my life to the service of humanity. I will give respect and gratitude to my deserving teachers. I will practice medicine with conscience and dignity. The health and life of my patient will be my first consideration. I will hold in confidence all that my patient confides in me. I will maintain the honor and the noble traditions of the medical profession. My colleagues will be as my brothers. I will not permit considerations of race, religion, nationality, party politics or social standing to intervene between my duty and my patient. I will maintain the utmost respect for human life from the time of its conception. Even under threat I will not use my knowledge contrary to the laws of humanity. These promises I make freely and upon my honor.

The Bulletin of the World Medical Association

Dr. Charles Hill, secretary of the British Medical Association, presented a well documented report on the subject of creating a bulletin of the World Medical Association. The bulletin will appear four times annually, will contain a résumé of the papers presented at the Council and at the General Assembly, and will report on subjects of medicosocial nature. Dr. Routley (Canada), President of the Council, announced that Dr. Morris Fishbein (Chicago), the Editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, is to be the chief editor of the bulletin.

Relations with Other International Organizations

The World Medical Association intends to maintain most cordial relations with the great international organizations, in particular with the World Health Organization and with UNESCO. The World Medical Association has appointed two permanent observers whose duty will be to report on the activities of these organizations. Dr. Maystre (Geneva), president of the Medical Association of Geneva, will report on the international organizations' meeting in Geneva; Dr. Cibrie (Paris), recording secretary of the World Medical Association for Europe, will report the discussions of the UNESCO. Dr. Calderone of New York, replacing Dr. Chisolm, has reported the aims of these great organizations and presented in an extensive table the activities and the aims of the World Health Organization.

Coming Meetings of the World Medical Association

The General Assembly decided to hold the 1949 meeting in London; the 1950 meeting in the United States, city not designated; and the 1951 meeting in Stockholm. In case of inability on the part of any of these nations to serve as the meeting place, Spain will be ready to receive the delegates.

Discussion of the Subject of Social Insurance

Social insurance is in process of expansion almost everywhere, and particularly in Europe. The International Association for Social Security and the International Labour Organization appear to be resolved to encourage a complete program of social insurance, embracing medical service for the entire world. The Council of the World Medical Association recommended

to the General Assembly at Geneva the initiation of an extensive inquiry, detailed and precise, to be reported on by the national medical associations with the view of arriving at correct information on the status of the subject in each country. A permanent committee on social insurance was appointed by the General Assembly. This committee will make every effort that doctors be not outdistanced in the matter of social security by the International Conference, which carries on its work on a permanent scale. It is a matter of regret that because of lack of organization doctors always find themselves faced with accomplished facts when it is too late to suggest and to bring about modifications of decisions already taken.

Several delegates presented in the course of discussion upon this subject rather general ideas for social insurance schemes in their respective countries

Recommendations

The following resolutions were adopted at the General Assembly in Geneva as fundamental in any system of social security.

- a. Freedom of choice of physician by the patient. Liberty of physician to choose patient except in cases of urgency or humanitarianism.
- b. No intervention of third party between physician and patient.
- c. Where medical service is to be submitted to control, this control should be exercised by physicians.
- d. Freedom of choice of hospital by patient.
- e. Freedom of the physician to choose the location and type of his practice.
- f. No restriction of medication or mode of treatment by physician except in case of abuse.
- g. Appropriate representation of medical profession in every official body dealing with medical care.
- h. It is not in the public interest that physicians should be full time salaried servants of the government or Social Security bodies.
- i. Remuneration of medical services ought not to depend directly on the financial condition of the insurance organization.
- j. Any Social Security or insurance plan must be open to the participation of any licensed physician, and no physician should be compelled to participate if he does not wish to do so.
- k. Compulsory health insurance plans should cover only those persons who are unable to make their own arrangements for medical care.
- l. There shall be no exploitation of the physician, the physician's services or the public by any person or organization.

World Medical Association and Scientific Research

In Canada, in the United States of America and in England are councils of medical research. The Assembly decided to request the most immediate and extensive diffusion possible of the results of these researches.

The Question of Refugee Doctors

The General Assembly listened to a communication of Dr. Coigney, Medical Advisor of the International Organization of Refugees in Geneva. Among the total of 800,000 "displaced persons" there are about 3,000 doctors between the ages of 25 and 45 years. Dr. Coigney requested the assembly to propose to various governments to pass definite laws to authorize these doctors to practice their arts after having passed examinations and after having obtained naturalization. The speaker invoked the seventh paragraph of the Hippocratic Oath adopted by the assembly. In the name of the Council, Dr. Routley emphasized the importance of the question and proposed to submit it at the next meeting of the Council.

The Council of the World Medical Association endorsed the efforts of the A.S.E.M. ("Swiss Aid to the Children of the Doctors, Victims of the War") whose office is in Geneva, and has decided to support this work so far as is possible.

The Newly Elected President

Dr. Charles Hill, honorary secretary of the British Medical Association, who has done so much for the organization of the World Medical Association, was elected by acclamation president for 1949.

Washington Letter

(From a Special Correspondent)

Oct. 7, 1948.

Displaced Professional Persons

According to the International Refugee Organization, which has headquarters in Washington, there are now 30,437 professional men and women in European D.P. camps who meet preferential requirements fixed by Congress in the Displaced Persons Act of 1948. Of this number, 1,150 are listed as physicians or surgeons. Nurses number 2,566, although complete information on the percentage of these who are registered is not available.

Volume on "America's Health"

One week after Washington offices of National Health Assembly had sent a letter to 4,200 individuals and representatives of organizations active in the public health field, 500 replies were received expressing interest in procurement of "America's Health: A Report to the Nation." This is the provisional title of the prospective volume which will present the findings of the fourteen sections participating in the National Health Assembly held here last May. According to the answers on the reply card, a 500 page volume priced at \$5 is preferred over 200 pages at \$4 or 600 to 700 pages at \$5.50 to \$6.50. The first week's 500 respondents indicated that they would be interested in purchasing a total of 2,500 copies. The volume, the fourteen sections of which are in the editing stage, is scheduled to appear between spring and fall of 1949.

Research a Challenge

Dr. Leonard A. Scheele, Surgeon General, U. S. Public Health Service, addressed the opening of the one hundred and twenty-fifth session of George Washington University School of Medicine September 20. Medical research, preventive medicine and psychiatry were singled out by Dr. Scheele as specialties in which too few students are interested. He said, "There is no greater challenge to intellectual and social pioneering in our age than research and preventive medicine. The shortages of medical investigators and medical health officers are acute, not only in the programs of the Public Health Service, but in research institutions and health departments all over the country." Dr. Scheele noted that ten graduates of George Washington University School of Medicine are now serving in the commissioned corps of Public Health Service.

Blood Plasma Distributed in Palestine

American Red Cross headquarters here has been informed that dried blood plasma donated for use in Palestine has been distributed to six principal cities. Shipped to the Middle East last July, the plasma is part of more than \$500,000 worth of medical and relief supplies donated by the American Red Cross for Jewish and Arab victims of the Palestine conflict. Nazareth, Gaza, Jerusalem, Tel Aviv, Ramallah and Jericho are the cities to which the plasma was sent, under supervision of International Red Cross. Meantime, the American Red Cross is sending two ambulances to the Syrian Red Crescent to aid Arab and Jewish refugees in Syria.

New Veterans Administration Hospital at Houston

The Army Corps of Engineers has issued invitations for bids to construct a thousand bed Veterans Administration neuropsychiatric hospital to be erected at Houston, Texas. Bids are scheduled to be opened October 21 at the District Engineer's Office, Galveston.

GOVERNMENT SERVICES

NAVY

NEW REGULAR OFFICERS

The following reserve officers have been transferred to the Medical Corps of the Regular Navy: Comdr. Thomas P. Rogers, Indianapolis; Lieut. (jg) David G. Dixon, Homestead, Pa.; Lieut. (jg) Martin D. Greaney Jr., Los Angeles; Lieut. (jg) Frank P. Hammon, Saratoga, Calif., and Lieut. (jg) Henry A. Schlang, Flushing, N. Y.

RESERVE OFFICERS ON ACTIVE DUTY

The following inactive reserve medical officers have been recalled to active duty: Lieut. Comdr. Alexander A. Bolton Jr., Lake Mohawk, Sparta, N. J.; Lieut. Comdr. William W. Manson, Sidney, N. Y.; Lieut. Gustave T. Anderson, North Platte, Neb.; Lieut. Trowbridge H. Mafit, Chicago; Lieut. (jg) Hodge M. Eagleson, Pittsburgh; Lieut. (jg) William S. Foutz, Cleveland; Lieut. (jg) Albert M. Jenkins, Norwood, Ohio, and Lieut. (jg) Francis X. MacAulay, Westminster, Mass.

The following lieutenants (jg) of the Medical Reserve Corps have received orders to report for their first active duty:

Armon A. Cairo, Steelton, Pa., to Georgetown University Hospital, Washington, for duty as intern.

Leon W. Clark, Houston, Texas, to University of Texas Hospitals, Galveston, Texas, for instruction in pediatrics.

Myron E. Erickson, Minneapolis, to Swedish Hospital, Minneapolis, for duty as intern.

Alfred K. Hawkes, New Orleans, to Tulane University of Louisiana School of Graduate Medicine, New Orleans, for instruction in otolaryngology.

Theo. N. Kirkland Jr., Montgomery, Ala., to Tulane University of Louisiana School of Graduate Medicine, New Orleans, for instruction in ophthalmology.

Charles E. Mangin, Biloxi, Miss., to Touro Infirmary, New Orleans, for instruction in pediatrics.

Harry L. Roberts Jr., Hanover, N. H., to Columbia Hospital for Women, Washington, D. C., for instruction in obstetrics and gynecology.

Paul E. Rockwell, Brooklyn, to the Administrative Command, Great Lakes, Ill., for duty in the Medical Department.

William R. Sillery, Cliffside Park, N. J., to Long Island College Hospital, Brooklyn, for instruction in obstetrics and gynecology.

Robert R. Wadlund, Wethersfield, Conn., to the Naval Hospital, St. Albans, N. Y.

POSTGRADUATE INSTRUCTION

The following officers of the Regular Navy have been nominated for courses of postgraduate instruction: Comdr. Ross P. Black, urology; Comdr. James A. Fields, otolaryngology; Comdr. Joseph A. Force, internal medicine, all at the University of Pennsylvania Graduate School of Medicine, Philadelphia; Comdr. Richard D. Nies, psychiatry, Naval Hospital, Bethesda, Md.; Comdr. Nelse O. Olson, ophthalmology, Washington University School of Medicine, St. Louis; Comdr. Joseph J. Timmes, surgery, University of Pennsylvania Graduate School of Medicine, Philadelphia; Lieut. Comdr. Wilbur S. Lummis Jr., internal medicine, Northwestern University Medical School, Passavant Hospital, Chicago; Lieuts. Don L. Andrus, surgery, University of Pennsylvania Graduate School of Medicine, Philadelphia; Edward L. Beckman, electroencephalography and neurophysiology, Naval Hospital, Bethesda, Md.; Berwyn R. Force, internal medicine, University of Pennsylvania Graduate School of Medicine, Philadelphia; Emil P. Thelen, fellowship in neurosurgery, Mayo Clinic, Rochester, Minn.; Frank H. Thomas Jr., internal medicine, University of Pennsylvania Graduate School of Medicine, Philadelphia, and Henry G. Wagner, ophthalmology, University of Pennsylvania Graduate School of Medicine, Philadelphia; Lieuts. (jg) John G. Esswein, residency in internal medicine, Naval Hospital, Philadelphia; Aubrey D. Bantt, Submarine School, New London, Conn.; Clarence H. Johnston, residency in pathology, Naval Hospital, San Diego, Calif., and Vincent E. Lowery, residency in psy-

chiatry, Naval Hospital, Bethesda, Md. Comdrs. James G. Bulgrin, residency in radiology, Naval Medical Center, Bethesda, Md.; John L. Flannery, instruction in pediatrics, University of Pennsylvania Graduate School of Medicine, Philadelphia; William S. Francis, residency in internal medicine, Naval Hospital, Oakland, Calif., and Jesse F. Richardson, fellowship in urology, Washington University Medical School; Lieut. Comdr. Byron E. Bassham, fellowship in surgery, Lahey Clinic, Boston; Lieuts. (jg) Winton R. Boyd, residency in obstetrics and gynecology, Naval Hospital, Oakland, Calif.; Carl A. Broadbush Jr., residency in surgery, Naval Hospital, Oakland, Calif.; Harold A. Davis, MCR, residency in internal medicine, Naval Hospital, San Diego, Calif., and Andrew M. Margileth, residency in pediatrics, Naval Hospital, National Naval Medical Center, Bethesda, Md.

WOMEN IN THE NAVY MEDICAL CORPS

Among the first 288 women officers who have been selected for commissions in the Regular Navy under the provisions of the Women's Armed Services Integration Act of 1948 are 2 in the Medical Corps, 21 in the Medical Service Corps and 1 chief warrant officer in the Hospital Corps. The 2 in the Medical Corps are Lieutenant Commander Frances Lois Willoughby of Washington, D. C., a graduate of the University of Arkansas School of Medicine, Little Rock, and Lieutenant Gioconda Rita Saraniero of Brooklyn, a graduate of Women's Medical College of Pennsylvania, Philadelphia.

INTERNS AT CIVILIAN INSTITUTIONS

The Bureau of Medicine and Surgery of the Navy announces the following Naval Medical Reserve Corps officers who have received their first orders for active duty as interns in civilian institutions under the new medical training program:

Lieut. (jg) James E. Fitzgerald, Chevy Chase, Md., to Gallinger Municipal Hospital, Washington, D. C.

Lieut. (jg) James R. Martin, Pittsburgh, to Allegheny General Hospital, Pittsburgh.

Lieut. (jg) Victor A. Moore Jr., Roswell, Ga., to University Hospital, Augusta, Ga.

Lieut. (jg) Joseph H. Pritchett Jr., Decatur, Ga., to University Hospital, Augusta, Ga.

Lieut. (jg) Rob J. Rutledge, Oklahoma City, to Kansas City General Hospital, Kansas City, Mo.

Lieut. (jg) Theodore Safford Jr., Wyoming, Ohio, to Lenox Hill, N. Y.

Lieut. (jg) Emmitt H. Shoemaker, Houston, Texas, to Hermann Hospital, Houston, Texas.

Lieut. (jg) Frank F. Stangl, Gallup, N. M., to Kansas City General Hospital, Kansas City, Mo.

AWARDS AND COMMENDATIONS

Commander John E. Nardini

The commanding general of the Philippine Coast Artillery Command awarded in April, 1942, the Silver Star to then Lieut. John E. Nardini of Philadelphia. The citation read as follows:

"For gallantry in action at Fort Mills, Philippine Islands, March 30, 1942. During the course of a combined enemy aerial and artillery bombardment of Fort Mills, Lieutenant Nardini, together with Pharmacist's Mate Second Class Donald E. Bansley, 2124309, U. S. Navy, without regard for his personal safety and while enemy planes were overhead, voluntarily left a place of shelter and evacuated a Marine who had been seriously wounded by shell fragments to Malinta Hospital. Dr. Nardini graduated from Temple University School of Medicine, Philadelphia, in 1938 and entered the Navy on July 18 of that year."

VETERANS ADMINISTRATION

NON-SERVICE-CONNECTED DISABILITIES

In a summary of its activities as of Aug. 31, 1948, the Veterans Administration reported a total of 105,048 patients in hospitals; of the 92,983 in Veterans Administration hospitals 61,091 were veterans with non-service-connected disabilities; of the 12,065 patients not in Veterans Administration hospitals, 7,488 were veterans with non-service-connected disabilities. In addition there were 14,342 beneficiaries in Veterans Administration homes.

Eighty-nine new hospitals were in progress at the end of August, of which the construction contracts had been awarded for 28, the designs were in progress in 50, the designs not started in 3 and the designs completed but construction contracts not awarded in 8. Through the end of the month, 63 sites have been acquired for new veterans hospitals, 20 specific sites have been approved but not acquired, 7 specific sites were in the process of selection; furthermore, 31 additions and conversions to the hospital addition and conversion program had been completed throughout the month and seventeen other additions and conversions were in progress.

At the end of August, 18,560 veterans were awaiting hospital admission; of these 18,490 had disabilities adjudicated non-service-connected; 77,277 applications for hospital or domiciliary care were received through the month, and 33,679 applications were filed for automobiles for disabled veterans.

COURSE IN REHABILITATION

Nineteen physicians from various Veterans Administration hospitals and one Army physician are enrolled in the second 3 month course of instruction in physical medicine and rehabilitation, which will continue until December 11 at the Veterans Administration Hospital, Hines, Ill. The course is under the direction of Dr. Louis B. Newman, chief of physical medicine rehabilitation service. This group visited the A. M. A. headquarters September 29 and was addressed by the directors of various departments.

PUBLIC HEALTH SERVICE

CONFERENCE ON GASTRIC CANCER

The National Advisory Cancer Council has called a conference on gastric cancer to be held in San Francisco December 13-14 to review research progress in this field and attempt to give direction to the development of methods of diagnosis and treatment. At one evening session of the conference, the scientists will meet with physicians of the San Francisco Bay area to discuss the clinical applications of their findings. Dr. Leonard A. Scheele, Surgeon General of the Public Health Service and chairman of the Council, said that according to official mortality records gastric cancer causes about 45 per cent of all deaths due to cancer and that the reason undoubtedly is the silent nature of the disease. "It is almost impossible," he said, "to diagnose gastric cancer in its early stages when cure might be expected."

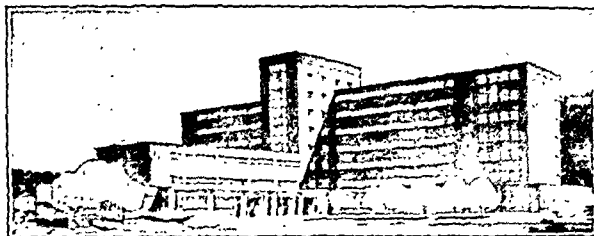
The Public Health Service has made previous attacks on the problem of gastric cancer, having had in effect for years a program of grants-in-aid specifically planned to develop research on gastric cancer. Altogether, twenty-three grants totaling \$261,424 are being devoted to research on such problems as the relation between gastric cancer and diet, the possible influence of hormones on gastric cancer and the role, if any, that pernicious anemia and ulcers play.

NEW DIRECTOR OF INDIAN HEALTH

The Surgeon General announces the appointment of Dr. Fred T. Foard as Director of Health at the Bureau of Indian Affairs of the Department of the Interior. Dr. Foard was graduated from University of Maryland Medical School and is a medical director in the United States Public Health Service.

NEW HOSPITAL AT ERIE, PA.

Ground breaking ceremonies were held in June marking the beginning of construction of the two hundred bed veterans general hospital at Erie, Pa., on the southwest corner of Old French Road and East 38th Street Boulevard. Among those



New Veterans Hospital at Erie, Pa.

taking part in the ceremony were Dr. Guy C. Boughton, representing the Erie County Medical Society; Capt. Henrietta Dorris, Army Nurse Corps; Dr. Joseph Galbo, representing the American Legion and Dr. Elmer Hess.

PERSONALS

Dr. J. Haywood Davis has been assigned as chief medical officer of the Veterans Administration Outpatient Clinic at Fort Worth, Texas, succeeding Dr. M. D. Badt.

Dr. Thomas J. Ready has been assigned as chief medical officer and Dr. Frank D. Thomas as chief of the outpatient medical service for the Pass-a-Grille regional area in Florida. Dr. Ready is a graduate of Georgetown University School of Medicine, Washington, D. C., and served in the Army Medical Corps during the recent war. Dr. Thomas is a graduate of Hahnemann Medical College, Philadelphia, and is a veteran of World War I.

DR. GILLIAM TO HEAD EPIDEMIOLOGY SECTION

Dr. Alexander G. Gilliam of the regular Army Medical Corps has been appointed by the Surgeon General to head the Epidemiology Section of the Cancer Control Branch, National Cancer Institute, which section was recently formed to improve information on cancer incidence and mortality. For two years Dr. Gilliam has been detailed to the University of Michigan School of Health, where he conducted studies on poliomyelitis and taught in the Department of Epidemiology. During the war he was epidemiologist to the United States of America Typhus Commission and was awarded the Typhus Medal for conducting typhus surveys among United States troops in Egypt, Tripoli, China, Burma and India.

CANCER RESEARCH GRANTS

The Federal Security Administrator announced September 26 National Cancer Institute grants of more than \$1,300,000 to finance cancer control and research work in institutions in twenty-six states, the District of Columbia, Puerto Rico, Canada and France. These grants were first approved by the National Advisory Cancer Council and by the Surgeon General of the Public Health Service at a meeting of the council a few days previously. Twelve grants totaling \$186,114 were made for such special projects as the development of laboratory diagnostic tests for cancer, surveys of occupational cancer and training in cytologic test techniques. More than one hundred medical and dental schools have qualified for financial aid since the beginning of the program of the Public Health Service less than a year ago.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest; such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

Yale University Retirements.—Retirement of three faculty members of Yale University School of Medicine, New Haven, has been announced: Dr. Arthur H. Morse, former chairman of the department of obstetrics and gynecology; Dr. George M. Smith, research associate in anatomy with the rank of professor, and Miss Alice M. Hunt, assistant professor of anesthesia. Dr. Morse, who has been departmental chairman and obstetrician and gynecologist in chief of the New Haven Unit of the Grace-New Haven Community Hospital since 1921, became assistant professor of obstetrics and gynecology at Yale in 1915 and received a promotion to clinical professor in 1920 and to professor in 1921. Dr. Smith has held the post of research associate with the rank of professor at Yale since 1936. He has been medical director of the Anna Fuller Fund, which provides research grants for investigating problems of cancer, since 1933. He is also a member of the board of scientific advisers of the Jane Coffin Childs Memorial Fund for Medical Research and is executive director of the National Advisory Cancer Council. Miss Hunt was instructor in anesthesia at Yale from 1922 to 1930 and since that time has been an assistant professor of anesthesia and anesthetist for the New Haven Unit of the Grace-New Haven Community Hospital.

FLORIDA

Cancer Seminar.—The Cancer Seminar of the Southeastern States will be held November 8-10, at the Tampa Terrace Hotel, Tampa, under the direction of the Tumor Clinic, Tampa Municipal Hospital, and sponsored by the American Cancer Society, Florida Division, and the Florida State Board of Health. The seminar will consist of morning and afternoon sessions, presenting in panel discussion carcinoma of the breast, the lung, the uterus, the ovary and the stomach. Each subject will be discussed by a surgeon or internist, a pathologist and a roentgenologist. At the end of each panel discussion thirty minutes will be allowed for questions from the audience. This seminar is conducted for the doctors of the Southeastern states and is primarily intended for the benefit of physicians in general practice; however, specialists in any field of medicine are urged to attend. Requests for hotel accommodations should be sent to Mr. A. K. Dickinson, % Tampa Chamber of Commerce, Tampa, Fla.

GEORGIA

Narcotic Violation.—The Federal Bureau of Narcotics reports that Dr. Joseph Haskell Hudson, Gough, pleaded guilty at Savannah to violation of the federal narcotic law and on May 11 was placed on probation for a period of three years.

Courses in Diagnosis of Rabies.—The Public Health Service Communicable Disease Center at Atlanta will offer a course in the laboratory diagnosis of rabies December 6-10, open to all grades of employed laboratory personnel. There is no tuition or laboratory fee, but traveling and living expenses must be paid by the individual or his employer. Applications should be made to Ernest S. Tierkel, 605 Volunteer Building, Atlanta 3, Ga.

ILLINOIS

First Medical Students' Loans.—Three premedical students have received loans of \$5,000 to finance their medical education under the \$100,000 joint medical student loan fund set up by Illinois Agricultural Association and the Illinois State Medical Society. The students and the universities which they will attend are: Burton E. Bagby of Mounds, Loyola University Stritch College of Medicine, Chicago; L. C. Fiene of Sparta and Lawrence Irish of Blandensville, the University of Illinois. Men from rural communities who have completed premedical courses, who are approved by local farm bureaus and medical societies and who will agree to practice in rural communities are eligible for \$5,000 loans at the rate of \$1,000 a year to complete their four year medical courses and one year internships. A list of twenty priority counties, where the situation is worse than usual, has been set up for Illinois. All three candidates are from such counties. The scholarship loan plan for medical training was established late in 1947 (THE JOURNAL January 1, page 48).

Chicago

Belfield Memorial Lecture.—The Chicago Urological Society at its meeting October 21 will hear the annual William T. Belfield Memorial Lecture, by Dr. Charles P. Mathe of San Francisco on "Operative Interventions on the Solitary Kidney." All society meetings for the year will be held in the Congress Hotel.

Symposium on Medicolegal Problems.—A symposium on Medico-Legal Problems will be held on Tuesday evenings at 7:30 October 26 through November 23 and on December 2 at the Chicago Bar Association. The programs, under the sponsorship of the Institute of Medicine of Chicago, the Chicago Medical Society and the Chicago Bar Association, are as follows:

Oct. 26, Mental and Chronological Age Problems in Law and Medicine: Medical Presentation, David Shakow, Ph.D., Chicago; Legal Presentation, Hon. Joseph J. Drucker, Chicago.

Nov. 2, Sex Offenses and Sex Offenders: Medical Presentation, Harry R. Hoffman, Chicago; Legal Presentation, Erwin W. Roemer, Esq., Chicago.

Nov. 9, Modern Methods of Crime Detection: Medical Presentation, Roy R. Grinker and Mr. Leonard Keeler, Chicago; Legal Presentation, Fred E. Inbau, Esq., Chicago.

Nov. 16, Income Tax Discrimination Against the Professions: Medical Presentation, Frank G. Dickinson, Ph.D., Chicago; Legal Presentation, Robert F. Spindell, Esq., Chicago.

Nov. 23, Problems of Alcoholism from the Medical and Industrial Aspects: Medical Presentation, Andrew C. Ivy, Chicago; Industrial Aspects: Edward C. Holmblad, Chicago; Legal Presentation, James J. McKenna, Esq., Chicago.

Dec. 2, How Can the Constitutional Office of Coroner Serve Modern Needs: Medical Presentation, Herbert S. Breyfogle, Richmond, Va.; Legal Presentation, Francis X. Busch, Esq., Chicago.

New Radio Health Series.—The Chicago Industrial Health Association will inaugurate its radio health series, entitled "It's Your Life," on October 18, at 11:15 to 11:30 a. m. over station WMAQ. The program, sponsored by Johnson and Johnson, will provide stories of better living through authentic tape-recorded interviews with anonymous Chicagoans. The plan is to include all phases of personal, family, community and industrial health. About 300 of Chicago's health and welfare agencies will aid with the planning and production of the programs. Broadcasts will be outlined by the association's radio advisory committee, composed of medical authorities, and will be completely reviewed by the committee and the educational committee of the Illinois State Medical Society. The Chicago Industrial Health Association was organized last January as a joint undertaking by the city officials and voluntary health and medical agencies, business and labor organizations and industrial and commercial firms. It is planning an extended program to include the community as a whole through the following health services: a health and social welfare referral service for employees, a monthly news letter to management, health agency surveys and services for industry, and a panel of leading industrial physicians and surgeons to assist firm medical departments.

Dr. Miller Elected President of Northwestern University.—Dr. J. Roscoe Miller, dean of Northwestern University Medical School, has been elected president of Northwestern University and will assume office July 1, 1949. He succeeds Franklin B. Snyder, who will retire Sept. 1, 1949. Dr. Miller will be the twelfth president of the university. Dr. John Evans, the founder and first president of the university, also was a physician and medical educator. Dr. Miller, a native of Utah, has been a member of the teaching staff of Northwestern University Medical School since 1930, in which year he received his M.D. degree from Northwestern. He served as assistant dean of the school from 1933 until his appointment as dean in 1941. During World War II he was a commander in the Medical Corps, U. S. Navy, in charge of the section on internal medicine of the Professional Division, Bureau of Medicine and Surgery, Washington, D. C. Dr. Miller is now president of the Chicago Medical Society, president elect of the Association of American Medical Colleges, a trustee of Wesley Memorial and Passavant Memorial and Evanston hospitals, and a member of numerous medical societies and associations. Under his able guidance during the past seven years the medical school has made outstanding progress in teaching and research and has increased its facilities and assets.

INDIANA

State Association News Letter.—The first issue of the Indiana State Medical Association's monthly *News Letter* was published in August as a supplement to the journal. It will be sent to all members of the state association.

Dr. Huber to Head Department.—Dr. Carl P. Huber, associate professor of obstetrics and gynecology, Indiana University School of Medicine, Bloomington-Indianapolis, was made professor and chairman of the new department of obstetrics and gynecology at the university August 1. Dr. Huber is a graduate

of the University of Michigan Medical School, Ann Arbor, 1928. He has been a staff member of the medical school and university hospitals at the medical center for nearly ten years. He also serves as consultant in obstetrics to the Indiana State Board of Health.

KANSAS

Society News.—At a meeting June 19 in Wichita, the Kansas Psychiatric Society chose Dr. Jesse F. Casey, Topeka, as president, and Dr. Frank F. Merker, Topeka, secretary-treasurer.

Postgraduate Course.—Meminger Foundation School of Psychiatry and the Winter Veterans Administration Hospital in Topeka are accepting applications for admission to the school on Jan. 1, 1949, available only to doctors who have had some psychiatric residency training in an approved hospital and who can therefore qualify for advanced standing. Those accepted will be placed in the class which entered July 1, 1948. Application should be made to Dr. Bert Boothe, Director of Professional Education, Winter VA Hospital, Topeka, Kansas.

MASSACHUSETTS

Public Health Forums at Harvard.—The second Public Health Forum of the Harvard University School of Public Health will be held at the school October 14 at 3:30 p. m. Dr. James R. Miller, Hartford, Conn., member of the executive committee of the Board of Trustees of the American Medical Association, will speak on "Opportunities Presented by the Development of National Health Program for the Public Health Profession and Private Practitioners of Medicine to Coordinate Their Activities in the Public Interest." The third forum speaker, Dr. Morris Fishbein, Editor of THE JOURNAL, will speak on November 16, at 3:30 p. m., on "Trends in Social Security."

Personals.—Dr. Harlan L. Paine, North Grafton, resigned as superintendent of the Grafton State Hospital, September 15, after completing twenty-seven years' service, to assume the superintendency of the Channing Sanitarium, Inc., in Wellesley. Dr. Paine served the department of mental health of the Commonwealth of Massachusetts for thirty-nine years.—Boston University School of Medicine has appointed Colonel Charles B. Perkins, Medical Corps, United States Army, as instructor of Army medical and military science and professor of radiology. Colonel Perkins is now serving as a resident in radiology at Massachusetts Memorial Hospitals under Dr. George Levene, chief of radiology.

MICHIGAN

The Biddle Lecture.—Dr. Edward A. Strecker, professor of psychiatry at the University of Pennsylvania School of Medicine, Philadelphia, presented the Biddle Lecture at the annual session of the Michigan State Medical Society September 22, on "Compromise or Chaos."

Hearing Consultants Service.—Schools in fifty counties have requested the service of the Michigan Department of Health's two hearing consultants this year. More than 250,000 children have been examined for hearing loss since the department's program began in 1943. Of the 3 per cent showing some hearing loss, about 50 per cent improved to normal hearing, according to the state department of health.

Survey of Premature Babies' Deaths.—The Bureau of Maternal and Child Health of the Michigan Department of Health is conducting a survey of the causes of death of babies born prematurely and is urging all expectant mothers to get early medical care. The bureau estimates that 8,000 premature infants were born in Michigan last year and, according to the death certificates, more than half of the 5,120 infant deaths were from causes related to prematurity. Pamphlets to aid the expectant mother may be obtained from local health departments or from the Michigan Department of Health, Lansing 4.

MINNESOTA

Receives Hospital Association Award.—Mr. James A. Hamilton, director of the hospital administration course at the University of Minnesota, Minneapolis, received the Award of Merit of the American Hospital Association for many years of leadership and activity in behalf of hospitals and the association. The award was conferred at the association meeting in Atlantic City, N. J., September 20-23.

Clinical Conference.—The Fall Clinical Conference of the Wells County Medical Society was conducted at the Bluffton Country Club September 15. Guest speakers were:

Fred L. Adair, Chicago, Toxemias of Pregnancy.
Archibald L. Hoyne, Chicago, Poliomyelitis Problems.
Frederick B. Wishard, Anderson, Ind., Routine Chest Surveys in Industry.
James O. Ritchey, Indianapolis, Ind., Dyspnoea of Cardiac Origin.

NEW YORK

Historical Portrait.—The Westchester County Medical Society has been presented an oil portrait of one of its early members, Dr. Isaac G. Graham, who was an assistant surgeon in the American army during the Revolutionary War and served under General Washington at West Point. The portrait was presented to the society by Mrs. F. Worden M. Graham, Washington, D. C., at the wish of her recently deceased husband, a great grandson of Dr. Isaac Graham. Dr. Isaac Graham began his medical practice in Unionville (now Hawthorne) in 1784 and continued in active practice for over half a century. He died September 1848, aged 88.

Postgraduate Instruction.—The Medical Society of the State of New York with the cooperation of the New York State Department of Health has arranged the following postgraduate lectures: The Richmond County Medical Society meeting at the Old Mill, Staten Island, November 10, at 9:30 p. m., will hear Dr. Howard C. Taylor Jr., New York, speak on "Physiologic Studies of Toxemia of Pregnancy." On December 8 they will hear a symposium on "Heart Disease and Pregnancy" given by two Brooklyn doctors, Edwin P. Maynard Jr. and Thornton Wallace. On November 2 Dr. George P. Heckel, Rochester, will speak on "Practical Application of Endocrines in Gynecology" before the members of the Schenectady County Medical Society, meeting in the auditorium of the Eastern New York Orthopedic Hospital, Schenectady, at 8:30 p. m.

New York City

Dr. Snyder to Direct Clinic.—Dr. Joseph E. Snyder has been named director of the Vanderbilt Clinic, the outpatient department for the voluntary hospitals of the Columbia-Presbyterian Medical Center, and administrative assistant in charge of the Columbia-Presbyterian Medical Center and of professional services to patients at the clinic. Dr. Snyder is a graduate of the University of Pennsylvania School of Medicine, Philadelphia, 1943.

Personals.—Dr. Martin R. Steinberg, assistant director since 1945, has been appointed director of Mount Sinai Hospital of New York, succeeding Dr. Joseph Turner, who has been named consultant to the Board of Trustees.—Dr. Edward L. Howes, associate clinical professor of surgery, Columbia University College of Physicians and Surgeons, was recently made an honorary member of the Piedmont Surgical Society of Northern Italy.

Reading Program for Mentally Ill.—Columbia University's School of Library Science is conducting a study "to develop the basic types of reading programs" that may aid mentally ill patients. A special internship has been established at a state hospital in the metropolitan area and a qualified graduate librarian is working under the direction of the hospital. A course entitled "library work with hospital patients" has been established to aid this work. The program is designed to determine whether rehabilitation is stimulated or retarded through planned reading programs.

OHIO

University Retirements.—Dr. Arthur H. Bill, Cleveland, retired in June as head of the obstetrical department of Western Reserve University School of Medicine. He expects to continue his private practice. Dr. Morse F. Osborn, a member of the Ohio State University College of Medicine Student Health Staff, Columbus, for twenty years, retired this summer.

Dr. Alter Goes to Beirut.—Dr. Robert L. Alter, Toledo, will assume duties in October as professor and head of the department of obstetrics and gynecology at American University in Beirut, medical center of the Near East. En route he will lecture in Munich, Germany, before displaced doctors in a program arranged by the International Refugee Organization, a branch of the United Nations. Dr. Alter received his medical degree in 1937 from Duke University School of Medicine, Durham, N. C., where he later became an instructor in obstetrics and gynecology. In 1946 he moved to Toledo, where he engaged in private practice.

PENNSYLVANIA

Personal.—Dr. John B. F. Wyant has resigned as medical examiner in Kittanning and rural public schools after having served nearly sixty years. The school directors, on accepting his resignation, named him a lifetime honorary physician of the local school district.

Graduate Course in Cancer.—The School of Medicine of the University of Pennsylvania, Philadelphia, will present three courses this year in the diagnosis and treatment of cancer for physicians, under a grant from the State Department of Health. The first course will extend from November 8 to 20; the second

from January 17 to 29, 1949, and the third, April 25 to May 6, 1949. The courses are limited to small groups. Application must be received not later than four weeks before the opening date of the courses applied for. Application blanks will be sent on request to Dr. Robert C. Horn, Secretary of the Cancer Commission, Hospital of the University of Pennsylvania, Philadelphia 4. Tuition fees and some compensation for time spent away from regular practice will be paid by the Division of Cancer Control of the State Health Department.

Pittsburgh

Dr. Parran to Head New School of Public Health.—A new graduate school of public health is being set up at the University of Pittsburgh through a \$13,600,000 grant from the A. W. Mellon Educational and Charitable Trust. The first dean of the new school will be Dr. Thomas Parran, former Surgeon General of the United States. The school will emphasize occupational and industrial health and hygiene and do basic research in all phases of public health. It is expected that the school will begin operation by the fall of 1949. An initial \$4,000,000 will enable the university to obtain an adequate faculty and facilities for teaching, and \$1,600,000 will be given during the first five years for operating and equipment expenses and for development. A \$5,000,000 building to house the school will be erected as soon as the school is accredited and the university is able to integrate its medical schools and hospitals in the medical center. The final \$3,000,000 will be paid within five years, when the school has developed "into a successful undertaking." Dr. Parran is a graduate of Georgetown University School of Medicine, Washington, D. C. He joined the public health service in 1917 and in 1936 began the first of three terms as Surgeon General. From 1930 to 1936 he was commissioner of health for New York State. Since early in 1948 he has served as chief of a mission to the Far East for the United Nations International Childrens Emergency Fund. His most recent assignment was chairman of the U. S. delegation to the first World Health Organization meeting in Geneva, Switzerland, June-July, 1948.

SOUTH DAKOTA

University Appointments.—Recent appointments to the University of South Dakota School of Medical Sciences, Vermillion, include: Dr. Thomas E. Eyres, professor of public health and director of student health; assistant professors, Dr. Jacob B. Belogorsky, pharmacology; Harold M. Carlisle, Ph.D., microbiology; Dr. James Y. Clarke, clinical pathology and parasitology, and Robert H. King, Ph.D., biochemistry; clinical associate professor, Dr. David J. Tschetter, radiology; assistant clinical professors, Drs. Brooks Ranney, obstetrics and gynecology, and Theodore H. Sattler, medicine; research assistant professor of oncology, Dr. Francis C. Tucker; associates, Keatha K. Krueger, Ph.D., biochemistry, and Dr. Theodore T. Mazur, anatomy; Kenneth R. Berquist, M.A., instructor in microbiology. Drs. E. M. Stansbury and Harold F. Hansen were promoted to clinical associate professors of obstetrics and gynecology and physical diagnosis, respectively.

WASHINGTON

Dr. Ripley Appointed Head of the Department of Psychiatry.—Dr. Herbert S. Ripley, assistant professor of psychiatry at Cornell University Medical College, New York, has been appointed professor of psychiatry and executive officer of the department of psychiatry at the University of Washington School of Medicine, Seattle. Dr. Ripley obtained his M.D. degree at Harvard Medical School, Boston, 1933. He has served on the staff of the New York Hospital and has been assistant, instructor and assistant professor in psychiatry, all at Cornell. Following his service during World War II, he served as consultant in psychiatry for the Veterans Administration and since 1947 has been consultant in psychiatry for the U. S. Public Health Service.

WISCONSIN

Personal.—The Biological Photographic Association recently gave its first annual award to Leo C. Massopust, director of the department of art and photography, Marquette University School of Medicine, and editor of the association's journal.

Dedicate Coolidge Laboratory.—Dedication ceremonies for the William D. Coolidge Laboratory of the General Electric X-Ray Corporation, Milwaukee, were held at the laboratory September 13. Among the speakers were Dr. Arthur C. Christie, Washington, D. C., who spoke on "Contributions of Industrial Research to Medicine." William D. Coolidge, Ph.D., who retired in 1944 as vice president and director of research of the General Electric Company, spoke on "Highlights of the Past and a Challenge for the Future." Charles E. Wilson, president, General Electric Company, was speaker at the dinner.

HAWAII

Personal.—Dr. Robert H. Marks, chief of the Tuberculosis Bureau of the Territorial Department of Health, Honolulu, has resigned to return to the mainland as medical director of Jefferson Tuberculosis Sanatorium, Birmingham, Ala.

Health Department Appointments.—Dr. Angie Connor, recently associated with the Children's Heart Association in Cincinnati, began duties July 1 as clinical pediatrician in the Bureau of Maternal and Child Health and Crippled Children. She is a graduate of Woman's Medical College of Pennsylvania, Philadelphia, 1937. Dr. Yan Tim Wong assumed duties July 1 as assistant chief and child psychiatrist with the Bureau of Mental Hygiene. He is a graduate of Peiping Union Medical College, China, where he served as assistant physician in neuro-psychiatry.

PUERTO RICO

Foreign Physicians Wanted.—Governor Jesus T. Piñero of Puerto Rico has signed a bill appropriating the sum of \$80,000 to contract the services of physicians in the United States and foreign countries to be employed in the municipal hospitals of the island where there is a shortage of doctors. Such physicians must sign a contract to serve with the Insular or Municipal governments of Puerto Rico, in accordance with conditions stipulated by the Commissioner of Health. According to Governor Piñero the 1947 mortality rate in Puerto Rico was 12.50 persons per thousand population, compared with 14.1 per cent in 1945. Infant mortality, which was of 39.5 in 1945 per thousand, dropped to 17.5 in 1947. The death rate for tuberculosis which was 202.5 per 100,000 inhabitants in 1945, dropped to 196.7 in 1947. Victims of malaria in 1945 were 43.1 per 100,000 population against 20.0 in 1947.

GENERAL

Society Election.—At the recent meeting of the Harvey Cushing Society Dr. Winchell McK. Craig, Rochester, Minn., was elected president; Dr. Howard A. Brown, San Francisco, vice president, and Dr. Louise C. Eisenhardt, New Haven, Conn., secretary-treasurer.

International College of Surgeons.—The Annual Assembly and Convocation of the United States Chapter, International College of Surgeons, will be held at the Kiel Auditorium, St. Louis, November 16-19. The program of scientific sessions will be supplemented by operative and nonoperative clinics in hospitals in St. Louis and vicinity. Extensive technical and commercial exhibits and motion pictures are scheduled.

Meeting of Public Health Association.—The annual meeting of the American Public Health Association and its twenty-nine related organizations will be held in Mechanics Hall, Boston, November 8-12. More than three hundred papers will be presented before the association's twelve sections: Dental health, engineering, epidemiology, food and nutrition, maternal and child health, health officers, industrial hygiene, laboratory, public health education, public health nursing, school health and vital statistics.

Grant by American Heart Association.—A \$25,000 grant from The American Heart Association has been presented to the Szent Gyorgyi Research Foundation, to aid studies in muscular contraction being conducted at the Marine Biological Institute, Woods Hole, Mass. The grant is the first in a program of financial assistance to heart disease research, which the association has been enabled to undertake as a result of its initial nationwide fund-raising campaign earlier this year. Dr. Szent Gyorgyi is director of research for the foundation, incorporated this year to aid scientific and educational research.

Southern Medical Association.—This association will convene in Miami, Fla., October 25-28 with headquarters at Dinner Key. The program will open with three general sessions which include a panel discussion on anticoagulant therapy and cardiovascular disease with Dr. E. Sterling Nichol, Miami, moderator, and another on peripheral vascular disease with Dr. George D. Lilly, Miami, moderator. The remaining program is divided into numerous sections on the specialties. The president's reception and ball will be held at the Municipal Auditorium in Bayfront Park October 27. The Woman's Auxiliary will meet in conjunction with the association.

Tuberculosis Death Rate Higher for Men.—According to the U. S. Public Health Service, tuberculosis statistics for the past thirty-seven years show that the death rate from tuberculosis in the United States is nearly twice as great for men as for women. During this period the death rate for the disease in the country as a whole has declined from 153.8 to 36.4 per year per 100,000 population. At the beginning of the period the death rate for both white and nonwhite males was about one-fifth higher than the rate for females, but in 1946 there was a

difference of more than 90 per cent between white men and white women. Among the colored population the death rates were 34 per cent higher for males than for females.

Improved Cancer Mortality Among Women.—Decline in the mortality from cancer, including the leukemias and Hodgkin's disease, among women insured in the Industrial Department of the Metropolitan Life Insurance Company has continued almost without interruption from 93.5 per 100,000 in 1932-1934 to 82.9 in 1947. These encouraging trends are attributed to the persistent campaign in popular education regarding cancer, which has resulted in women's seeking medical attention earlier, when the chances of cure are more favorable. Patients who had delayed three months or more decreased from 62.3 per cent of the total from 1923 to 1938 to 42.8 per cent in 1946. In contrast, the recorded death rate from cancer among white females at 1 to 24 years rose from about 5 per 100,000 in 1932-1934 to 6.8 per cent in 1945-1947. The study was published in the *Statistical Bulletin* in August.

Incidence of Poliomyelitis.—The U. S. Public Health Service reported September 22 that 1,841 cases of poliomyelitis were reported for the previous week. In general the incidence declined in the Southern states but increased in the Northern states and in California. Increases aggregating 381 cases were reported as follows: California, 205 to 326; Ohio, 79 to 149; South Dakota, 10 to 55; Illinois, 71 to 99; Tennessee, 13 to 38; Pennsylvania, 51 to 74; New Jersey, 50 to 71; New York, 95 to 115; Minnesota, 101 to 115, and Michigan, 57 to 71. The most important decreases were reported in South Carolina, from 112 to 76; Texas, from 57 to 42; West Virginia, from 28 to 10, and Oklahoma, from 37 to 19. Total cases reported through the week ended September 18 was 16,029, as compared with 5,617 in 1947, 15,780 in 1946, and a five year median of 8,009 for the corresponding periods.

Mental Hygiene Committee.—The annual meeting of the National Committee for Mental Hygiene will be held on November 3-4 at the Hotel Pennsylvania, New York. The program will consist of four scientific sessions during the mornings and afternoons, a business luncheon on the first day and the annual luncheon on the second day, at which the presentation of the Lasker Award will be made and the ten year national program for mental health discussed. The first scientific session will be devoted to international matters emerging from the International Congress on Mental Health held August 11-21 in London, the program of UNESCO and the World Health Organization and the newly organized World Federation for Mental Health. The second session will be a current evaluation of the federal mental hygiene program. The third session will focus on the development and responsibility of the citizen for improvement of the state psychiatric services, and the fourth session will clarify the foundations for positive mental health and the activities supportive of this goal.

Grants for Research.—The Jane Coffin Childs Memorial Fund for Medical Research has announced a total of \$84,275 for support of cancer research projects and fellowships. Among the grants were \$4,100 for one year to Dr. William B. Atkinson, assistant professor of anatomy, and Dr. Howard C. Taylor Jr., professor of obstetrics and gynecology, Columbia University College of Physicians and Surgeons, New York, for cytochemical investigations on hyperplastic and malignant uterine tissues in women in relation to their endocrine state; \$15,000 for three years to Edward L. Tatum, Ph.D., Stanford University School of Medicine, San Francisco, for studies on gene mutation in micro-organisms in relation to enzyme production and activity, and \$5,000 for one year to Dr. Gray H. Twombly, assistant professor of clinical obstetrics and gynecology, Columbia University College of Physicians and Surgeons, New York, for a study of selective localization of hormones in normal and cancer-bearing tissues by radioactive estrogens and allied substances.

New Cancer Journal.—A monthly journal, *Cancer*, devoted exclusively to cancer, with major emphasis on clinical reports and experimental studies, appeared in May of this year. In addition to the original papers, it includes a complete current bibliography of the world-scattered literature on cancer, as well as abstracts of all significant papers. The journal, sponsored by the American Cancer Society, contains no paid advertising, has an attractive format and is liberally illustrated. The editor is Dr. Fred W. Stewart, New York. The editorial advisory board is made up of forty-four leaders in the study and treatment of cancer and seven authorities on education and public health statistics. The first issue was dedicated to the memory of Dr. James Ewing (1866-1943), American pioneer in neoplastic diseases. Subscriptions and business inquiries should be addressed to the American Cancer Society, 49 East 33rd Street, New York 16. Contributions should be addressed to the editor, Memorial Hospital, 44 East 68th Street, New York 21.

Interim Report of the National Foundation.—The National Foundation for Infantile Paralysis in its 88 page interim annual report published early in September showed that a total of \$4,675,971 in March of Dimes funds was allocated to poliomyelitis research, education and epidemic aid during the seven month period ending Dec. 31, 1947. The report announced that \$474,827 was spent on virus research, \$254,480.13 in research on prevention and treatment of after-effects, \$160,000 for medical care, \$1,022,045.96 for professional education and \$2,764,618.30 for emergency epidemic aid. In the past five years 81,530 cases of poliomyelitis have been reported as compared with 31,993 in the previous five year period. Nationally, epidemics of 1947 showed a total of 10,734 cases as compared with 25,698 in 1946. In 1947 three states, Ohio, Idaho and Delaware, suffered their most severe epidemics of poliomyelitis. In professional education the National Foundation has spent \$4,382,994 in the last decade on advanced training for nurses, physical therapists, orthopedists, pediatricians, neurologists and other specialists; a parallel program has been carried on to educate and inform the public.

The World Health Assembly.—Representatives and observers from sixty-eight nations met at Geneva, Switzerland, June 24 to July 24, to form the permanent structure of the World Health Organization. Of fifty health activities considered, priority was given to global campaigns against malaria, tuberculosis, venereal infections and the promotion of maternal and child welfare, better nutrition and environmental hygiene. Work is being continued by the World Health Organization in international epidemiology and quarantine; health statistics and nomenclature; fellowships, medical literature and emergency services. International standards, including therapeutic, prophylactic, diagnostic agents, the international pharmacopeia, editorial services and publications, including reference services and library, were also considered.

Dr. Brock Chisholm of Canada was elected the World Health Organization's first director-general. Prior to becoming executive secretary of the Interim Commission of the World Health Organization in 1946, Dr. Chisholm had served since November 1944 as Canada's first Deputy Minister of Health. The appointed, eighteen member, executive board met under the chairmanship of Sir Aly Tewfik Shousha Pasha, Egypt.

Budgets of \$4,800,000 for the rest of 1948 included repayment of a \$2,000,000 loan from United Nations; \$5,000,000 was approved for 1949. At the invitation of the Pasteur Institute of Paris, the World Health Organization will make use of its many laboratories throughout the world in studying epidemiologic diseases.

CORRECTION

Artificial Kidney.—In the article of this title by Gordon Murray and co-workers in *THE JOURNAL* Aug. 28, 1948, table 2, page 1597, the last chemical mentioned in the formula should be "sodium bicarbonate" and not "sodium carbonate."

Marriages

JACK WHITE McELWAIN, Syracuse, N. Y., to Miss Ruth Van Deventer Jones at Locust Valley, L. I., June 12.

ROBERT BEENE PENDER, Utica, N. Y., to Miss Alice Culpepper Gordon of Daytona Beach, Fla., June 12.

WILLIAM CECIL BAKER, Williamsville, N. Y., to Miss Dorothy Louise Herron of Five Mile, June 19.

JAMES ENGLISH COUSAR III to Miss Mary Evelyn Young, both of Florence, S. C., June 19.

ROBERT WHEARY IRVIN JR., Roanoke, Va., to Miss Dorothy Louise McGee of Ford, June 21.

JAMES EDWARD RYAN to Miss Mary Margaret Douglas, both of Schenectady, N. Y., June 12.

HARRY C. FOSTER JR., Richmond, Va., to Miss Billie Newton of Charlotte, N. C., June 26.

JOSEPH E. MOLLOY, Hilo, Hawaii, to Miss Ruth W. Hopton of Marseilles, Ill., June 9.

JOHN EDWARD DAVIS JR., to Miss Janet Edith Hannon, both of Troy, N. Y., May 15.

WILLIAM FRANK to Miss Betty Rose Smith, both of Washington, D. C., recently.

WILLIAM F. HEGGLI, San Francisco, to Miss Lucille Hottel at St. Louis, recently.

Deaths

John Aikman * Rochester, N. Y.; born in Roxbury, N. Y., Jan. 12, 1885; University and Bellevue Hospital Medical College, New York, 1908; assistant professor of pediatrics at the University of Rochester School of Medicine and Dentistry; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; past president of the Rochester Academy of Medicine which in 1948 awarded him the Albert David Kaiser Medal for outstanding medical service; chairman of the Section on Pediatrics of the American Medical Association from 1944 to 1946; served during World War I; affiliated with the Strong Memorial, Park Avenue, Genesee and Rochester General hospitals; died July 13, aged 63, of cerebral thrombosis.

Leo Winter, New York; born in New York, May 26, 1890; University and Bellevue Hospital Medical College, New York, 1934; also a dentist; professor of oral surgery and director of the oral and minor surgery clinic, New York University College of Dentistry; member of the American Medical Association; fellow of the American College of Surgeons; served in France during World War I; consulting oral surgeon, Montefiore Hospital for Chronic Diseases; visiting dental surgeon, Bellevue and New York Foundling hospitals; author of "A Textbook of Exodontia" and "Operative Oral Surgery"; an honorary medical officer of the fire department; died in Lawrence, Long Island, July 6, aged 58, of heart disease.

Frank John Novak Jr., * Chicago; born in Chicago, July 3, 1888; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1914; specialist certified by the American Board of Otolaryngology; member of the American Laryngological, Rhinological and Otolological Society and the American Otolological Society; in 1948 received a gold medal from the American Academy of Ophthalmology and Oto-Laryngology for his many years' service to the academy; served during World War I; lieutenant colonel, medical corps, Army of the United States, not on active duty; on the staff of the Henrotin Hospital; died at Riverside, Ill., July 27, aged 60, of coronary sclerosis.

J. Wilford Allen, South Kent, Conn.; New York Homeopathic Medical College and Hospital, New York, 1895; served on the faculty of his alma mater and a member of the Connecticut Homeopathic Medical Examining Board; formerly on the staffs of the Hahnemann and Flower hospitals in New York; died in the Charlotte Hungerford Hospital in Torrington, July 17, aged 83, of fracture of the neck of the femur and arteriosclerotic heart disease.

Edward Lawrence Asbell * Kansas City, Kan.; St. Louis College of Physicians and Surgeons, 1896; affiliated with Providence, Bethany and St. Margaret's hospitals; died July 3, aged 75, of heart disease.

Zae R. AschenBrenner * Farmington, Mich.; State University of Iowa College of Medicine, Iowa City, 1920; past president of the Oakland County Medical Society; served during World War I; for many years president of the school board; died in the Harper Hospital, Detroit, July 20, aged 55, of acute lymphatic leukemia.

Paul Herbert Bishop Jr., Coraopolis, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1943; interned at the Williamsport Hospital in Williamsport; formerly resident at the Veterans Administration Hospital in Memphis, Tenn.; served during World War II; died July 5, aged 30.

Ernest Lehman Wheeler Brown, Iowa Falls, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the American Medical Association; veteran of the Spanish-American War; died July 19, aged 73.

Frederic Bushong * Pottstown, Pa.; Jefferson Medical College of Philadelphia, 1907; died April 15, aged 68, of chronic rheumatic heart disease.

Alexander McConall Butts, Holdenville, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1895; died July 2, aged 77.

James Graham Calhoun, St. Louis; Washington University School of Medicine, St. Louis, 1896; specialist certified by the American Board of Ophthalmology; member of the American Medical Association and American Academy of Ophthalmology and Otolaryngology; served during World War I; died in Deaconess Hospital July 5, aged 79, of subarachnoid hemorrhage and hypertension.

Robert E. L. Campbell * Baltimore; University of Maryland School of Medicine, Baltimore, 1904; also a graduate in pharmacy; died in the Maryland General Hospital June 30, aged 73, of bronchopneumonia and carcinoma of the stomach.

C. Gray Capron * Utica, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1890; surgeon in chief at the Commercial Travelers Mutual Accident Association; died in Cooperstown, July 10, aged 81, of coronary thrombosis.

Clarence A. Carpenter * Onaway, Mich.; Physio-Medical College of Indiana, Indianapolis, 1898; first president of the Presque Isle County Medical Society; formerly health officer of Onaway; died in Little Traverse Hospital, Petoskey, July 17, aged 73, of carcinoma of the stomach with metastases to the liver.

Rodolph Kossuth Comeaux, Youngsville, La.; University of the South Medical Department, Sewanee, Tenn., 1903; died June 12, aged 69.

William Cornelius Couch, St. Petersburg, Fla.; Gross Medical College, Denver, 1895; member of the American Medical Association and the Medical Society of the State of New York; formerly practiced in Watertown, N. Y., where he was on the staffs of the House of the Good Samaritan and Mercy Hospital, where he died July 5, aged 78, of carcinoma of the stomach.

Reuben Cronson * New Rochelle, N. Y.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1888; a founder and past president of the medical board of Jewish Memorial Hospital in New York; died in Miami Beach, Fla., July 4, aged 87, of myocardial failure.

Percy Edwin Decatur, Ashland, Ohio; Eclectic Medical College, Cincinnati, 1904; member of the American Medical Association; served during World War I; member of the staff of Samaritan Hospital; died May 30, aged 73, of injuries received in a fall.

Enos Goble Denison * Sheridan, Wyo.; Ohio Medical University, Columbus, 1903; past president of the Wyoming Department of Public Health; served during World War I; on the staff of Sheridan County Memorial Hospital; division surgeon for the Chicago, Burlington and Quincy Railroad; died May 12, aged 73, of coronary thrombosis.

Clifford Ferrins Dowkontt, New York; Yale University School of Medicine, New Haven, 1919; died July 13, aged 55.

Charles Daniel Eby * Leigh, Neb.; University of Nebraska College of Medicine, Omaha, 1904; died in Lutheran Hospital, Omaha, July 28, aged 69, of cerebral embolism.

Edward Hollinger Epler, Philadelphia; Medico-Chirurgical College of Philadelphia, 1910; died May 6, aged 73, of acute coronary occlusion.

Fred Franklin Farr, Neelsville, Mo.; Barnes Medical College, St. Louis, 1898; died June 28, aged 70.

Charles Wilmer Fitch, New York; Columbia University College of Physicians and Surgeons, New York, 1899; member of the American Medical Association; died July 1, aged 74, of arteriosclerotic heart disease.

Zenobia Gustava Gilpin, Richmond, Va.; Howard University College of Medicine, Washington, D. C., 1923; on the staff of Richmond Community Hospital; served on the city lunacy commission; died June 11, aged 48.

Oswald Glasberg, New York; Medizinische Fakultät der Universität, Wien, Austria, 1926; member of the American Medical Association; died July 15, aged 49.

Onslow Allen Gordon * Brooklyn; Long Island College Hospital, Brooklyn, 1911; formerly clinical professor of obstetrics and gynecology at the New York University College of Medicine; served during World War I; fellow of the American College of Surgeons; fellow and past president of the New York Obstetrical Society and the Brooklyn Gynecological Society; affiliated with the Carson C. Peck Memorial Hospital; consultant in obstetrics at St. John's Hospital; died July 7, aged 61, of carcinomatosis.

Harry Hinshillwood, Danville, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1895; died recently, aged 79, of cerebral thrombosis and hypertension.

Allen Webb Hobby, Sidney, Ohio; Eclectic Medical Institute, Cincinnati, 1899; died recently, aged 71, of cerebral hemorrhage.

Robert Edward Hogan * West Plains, Mo.; Washington University School of Medicine, St. Louis, 1909; member of the school board; president of the West Plains Bank; owner of the Christa Hogan Hospital; died in Missouri Baptist Hospital, St. Louis, July 8, aged 60, of pneumonia, following an operation.

Henry Lincela Houghton, Boston; Harvard Medical School, Boston, 1894; member of the American Medical Association; at one time member of the board of registration in medicine; during World War I head of the medical examining board for the draft in Boston; past president of the Hahnemann Hospital; died June 17, aged 80, of arteriosclerotic heart disease.

Mortimer A. Houser ☉ Tulsa, Okla.; Milwaukee Medical College, 1903; for many years official examiner for the city athletic commission; died in Bentonville, Ark., June 20, aged 70, after an operation.

Charles Bartholomew Howard, Philadelphia; Howard University College of Medicine, Washington, D. C., 1922; died June 7, aged 59, of heart disease.

William L. Howard, Western State Hospital, Tenn.; Memphis (Tenn.) Hospital Medical College, 1895; member of the American Medical Association; specialist certified by the American Board of Otolaryngology; assistant physician at Western State Hospital; died in Campbell's Clinic, Memphis, July 3, aged 76, of embolism, following a fractured hip received in a fall.

John David Howland, Cheektowago, N. Y.; Niagara University Medical Department, Buffalo, 1891; served during the Spanish-American War and in France during World War I; formerly deputy medical examiner for Erie County; for many years associated with the Erie County Home and Infirmary in Buffalo; died in Buffalo General Hospital June 16, aged 83, of carcinoma.

Clarence Elmer Hyde, San Francisco; Columbia University College of Physicians and Surgeons, New York, 1909; member of the American Medical Association; died in San Jose, June 6, aged 66, of bronchopneumonia and arteriosclerosis.

Lucia Kemp, Bucyrus, Ohio; Fort Wayne College of Medicine, 1891; died June 24, aged 85.

Lester Floyd Kennedy ☉ Detroit; Detroit College of Medicine and Surgery, 1915; died June 28, aged 56.

Ralph William Kraft ☉ Hobart, Ind.; Indiana University School of Medicine, Indianapolis, 1936; at one time assistant superintendent of the Ohio State Sanatorium in Mount Vernon; member of the staffs of Mercy and Methodist hospitals in Gary and Porter Memorial Hospital in Valparaiso; served as health commissioner and school physician; accidentally shot and killed in a hunting lodge near Ely, Minn., June 23, aged 38.

Harry Lee, Waterhill, Tenn.; University of Tennessee Medical Department, Nashville, 1900; died May 20, aged 73, of nephritis and myocardial insufficiency.

Joseph Ira Lindsay, Grafton, Mass.; University of Vermont College of Medicine, Burlington, 1888; member of the American Medical Association; formerly on the staff of Memorial Hospital, Worcester; died June 6, aged 85.

Herbert Milton Long ☉ Pittsburgh; University of Pittsburgh School of Medicine, 1914; fellow of the American College of Surgeons; chief surgeon for the Pittsburgh and Lake Erie Railroad; served during World War I; member of the staff of the Southside Hospital; died June 15, aged 58, of sarcoma.

Frederick Henry Lovell, Irvington, N. J.; the Hahnemann Medical College and Hospital, Chicago, 1909; served on the staff of the Irvington General Hospital, where he died July 6, aged 87, of arteriosclerosis.

James Chalmers Lyons, Linwood, Pa.; Jefferson Medical College of Philadelphia, 1909; died June 15, aged 67, of coronary occlusion.

Elmer Ellsworth Mace ☉ New Palestine, Ind.; Medical College of Indiana, Indianapolis, 1902; served during World War I; died in St. Vincent's Hospital, Indianapolis, July 1, aged 71, of coronary occlusion.

Donald MacIntyre, Big Rapids, Mich.; Michigan College of Medicine and Surgery, Detroit, 1897; member of the American Medical Association; for many years county coroner; past president and secretary of the Mecosta County Medical Society; on the staff of Community Hospital; died June 30, aged 75, of arteriosclerosis.

Robert Donald MacKinnon ☉ Philadelphia; Temple University School of Medicine, Philadelphia, 1913; instructor in surgery at his alma mater; served in the Boer War and with the Canadian Army Medical Corps during World War I; affiliated with the Temple University Hospital, where he died June 11, aged 70 of arteriosclerosis and abdominal aortic aneurysm.

Marcus J. Magruder, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1889; past president, Orleans Parish Medical Society; and vice president of the Louisiana State Medical Society; affiliated with the

Touro Infirmary; in 1946 resigned from the board of administrators of the Tulane Education Fund; received the honorary degree of doctor of laws from Tulane in 1946; died July 4, aged 82, of arteriosclerosis.

Joseph Crockett Manning, Savannah, Mo.; University Medical College of Kansas City, 1913; president of the school board; affiliated with St. Francis Hospital, Maryville, St. Joseph's Hospital and the Missouri Methodist Hospital, where he died June 10, aged 61, of cerebral hemorrhage.

Charles Beverly Martin, Bowling Green, Ky.; University of Louisville (Ky.) Medical Department, 1890; shot to death June 30, aged 83.

Clarence Randle McDonald, Mannford, Okla.; University of Tennessee Medical Department, Nashville, 1909; past president of the Creek County Medical Society; served during World War I; died in the Hillcrest Hospital, Tulsa, June 5, aged 65, of coronary thrombosis.

Neill Smith McLeod, Highland Park, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1924; member of the American Medical Association; died June 7, aged 50.

Thomas Reid McNab, Beverly Hills, Calif.; Medical Department of the University of California, San Francisco, 1903; served during World War I; formerly on the faculty of his alma mater; member of the founders group of the American Board of Surgery; member of the Pacific Coast Surgical Association; fellow of the American College of Surgeons; served on the staff of the Hospital of the Good Samaritan in Los Angeles; died in Honolulu, Hawaii, June 21, aged 70, of acute coronary thrombosis.

James Mansfield Meason, Chandler, Ariz.; Maryland Medical College, Baltimore, 1905; at one time in the Indian Service; formerly mayor of Chandler; county health officer; died in the Good Samaritan Hospital, Phoenix, June 22, aged 70.

Ray Sixtus Nelson ☉ New York; Syracuse University College of Medicine, 1911; formerly on the faculty of the New York Post-Graduate Medical School and Hospital, Columbia University, New York; served during World War I; on the staffs of Gotham and St. Francis hospitals; died June 18, aged 63, of coronary thrombosis.

William Clark Newcome, Indiana, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1892; member of the American Medical Association; a member of the staff of Adrian Hospital in Punxsutawney; died in Miami, Fla., May 30, aged 80, of cerebral hemorrhage.

Z. Oliver Nobert, Rome, N. Y.; Bennett Medical College, Chicago, 1891; died June 27, aged 86, of carcinoma of the pharynx and coronary sclerosis.

Anthony E. Otto, Alexandria, Ind.; Medical College of Ohio, Cincinnati, 1883; member of the American Medical Association; died June 3, aged 86, of cardiovascular-renal disease.

Wilfred Rossner Parsons, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1932; member of the American Medical Association; assistant professor of pediatrics at his alma mater; served during World War II; affiliated with St. Vincent Infirmary, Baptist State Hospital, Arkansas Children's Home and Hospital and University Hospital; died June 13, aged 43, of coronary occlusion.

Marion Lee Peeples, Scotia, S. C.; University of Louisville (Ky.) Medical Department, 1891; member of the American Medical Association; died June 16, aged 77.

Wallace Bernard Pyle ☉ Jersey City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; member of the staffs of the Bayonne (N. J.) Hospital and Dispensary, St. Francis Hospital, Jersey City Medical Center and Christ Hospital; one of the founders and a trustee of Fairmount Hospital; died in Orange June 10, aged 71, of cerebral hemorrhage.

Rufus Livius Raiford ☉ Franklin, Va.; University College of Medicine, Richmond, 1906; founder and until recently chairman of the board of Raiford Memorial Hospital; for many years secretary of the Southside Medical Association; died June 25, aged 67, of coronary thrombosis.

Carl Frost Raver, Charleston, W. Va.; University of Michigan Homeopathic Medical School, Ann Arbor, 1901; served as health officer of Mankato, Minn., Aberdeen, S. D., and La Salle, Ill.; formerly director of the division of vital statistics, state board of health; died June 11, aged 69, of carcinoma of the larynx.

Simon Warren Reichard, Dayton, Ohio; Medico-Chirurgical College of Philadelphia, 1901; member of the American Medical Association; served during World War I; on the staffs of Good Samaritan and St. Elizabeth's hospitals; affiliated with the Veteran Administration Hospital where he died June 19, aged 70, of cerebral hemorrhage and hypertension.

Anna Magilowa Reinstein, Cheektowaga, N. Y.; Universität Bern Medizinische Fakultät, Switzerland, 1891; died June 21, aged 82, of diabetes mellitus and gangrene of the foot.

Joseph Anthony Rucker, Bedford, Va.; University of Louisville (Ky.) Medical Department, 1893; member of the American Medical Association; past president of the Bedford County Medical Society; for many years secretary of the county board of health; in 1947 was awarded the diamond insignia, symbol of fifty or more years of service with the Norfolk and Western Railway; died June 29, aged 77, of cerebral hemorrhage.

Ralph M. Ryan, Antonito, Colo.; Bennett Medical College, Chicago, 1912; member of the American Medical Association; served during World War I; died in St. Joseph's Hospital, Del Norte, June 30, aged 75, of heart disease.

Edward Saylor, Phillipsburg, Mo.; Missouri Medical College, St. Louis, 1884; member of the American Medical Association; died in St. John's Hospital, Springfield, June 23, aged 93, of fracture of the neck of the right femur and prostatic hypertrophy.

Joseph Scattergood Jr., West Chester, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1929; member of the House of Delegates of the American Medical Association from 1942 to 1944; secretary treasurer of the Chester County Medical Society; medical director of Darlington Sanatorium and Chester County Hospital, where he died June 4, aged 43, of uremia.

Howard Francis Schell, Cincinnati; University of Michigan Homeopathic Medical School, Ann Arbor, 1904; died in the Christ Hospital June 16, aged 68, of uremia and prostatic hypertrophy.

Bernard Schwartz, Philadelphia; Jefferson Medical College of Philadelphia, 1908; member of the American Medical Association; served on the staff of Northern Liberties Hospital, where he died June 25, aged 71, of pulmonary hemorrhage.

Alfred N. Shotwell, Mount Clemens, Mich.; Detroit Medical College, 1884; died in June, aged 90, of cerebral hemorrhage.

John A. Shower, York, Pa.; Southern Homeopathic Medical College, Baltimore, 1894; member of the American Medical Association; died June 24, aged 88, of carcinoma of the descending colon.

Albert Ernest Small Ⓢ Melrose, Mass.; Harvard Medical School, Boston, 1900; served during World War I; on the staff of Melrose Hospital; chairman of the board of health; died in Palmer Memorial Hospital, Boston, June 9, aged 72, of recurrent carcinoma of the rectum.

Marianna Eddy Smalley Ⓢ Ann Arbor, Mich.; University of Michigan Medical School, Ann Arbor, 1931; instructor in internal medicine at her alma mater; member of the American Trudeau Society, American Association of the History of Medicine and the Michigan Trudeau Society; on the staff of St. Joseph's Hospital; died June 21, aged 44.

Francis Henney Smith Ⓢ Abingdon, Va.; University College of Medicine, Richmond, 1904; specialist certified by the American Board of Internal Medicine; past president of the Southwestern Virginia Medical Society and the Medical Society of Virginia; served during World War I; a member of the state board of medical examiners; fellow of the American College of Physicians; affiliated with the George Ben Johnston Memorial Hospital; died July 1, aged 67.

Horace R. Stauffer, Nappanee, Ind.; Rush Medical College, Chicago, 1883; for many years member of the state legislature; died July 2, aged 90.

Dudley Donnelly Stetson Ⓢ Santa Fe, N. M.; Colorado School of Medicine, Boulder, 1905; specialist certified by the American Board of Dermatology and Syphilology; formerly on the faculty of the New York Post-Graduate Medical School and Hospital, Columbia University; at one time on the staffs of Lincoln and Roosevelt hospitals in New York; died June 14, aged 70, of heart disease.

John Coleman Stiles, Dallas, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1898; member of the American Medical Association; died in the Methodist Hospital May 11, aged 74, of cerebral hemorrhage and pyelonephritis.

Charles Frederick Stotz Ⓢ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; fellow of the American College of Surgeons; a trustee of the Chicago Medical Society; a member of the "Fifty Year Club" of the Illinois State Medical Society; connected with Walther Memorial Hospital since its founding, serving as chief of staff, president of staff and president emeritus; died July 18, aged 75, of carcinoma.

Frank Raphael Strong, Brewerton, N. Y.; Syracuse University College of Medicine, 1904; died in the University Hospital, Syracuse, June 20, aged 72, of a hip fracture received in a fall and arteriosclerotic heart disease.

William Herman Sugarman Ⓢ Brooklyn; Cornell University Medical College, New York, 1914; specialist certified by the American Board of Internal Medicine; affiliated with the Brooklyn Hebrew Home and Hospital for Aged and the Jewish Hospital, where he died June 23, aged 59, of acute coronary occlusion with myocardial infarction.

Frank Augustus St. Sure, Haiku, Hawaii; College of Physicians and Surgeons of San Francisco, 1900; veteran of the Spanish-American War; member of the American Medical Association; died June 22, aged 74.

Carol Lincoln Sweet, Los Gatos, Calif.; University of the City of New York Medical Department, New York, 1882; formerly president of the Idaho State Medical Association and secretary of the Idaho State Board of Medical Examiners; veteran of the Spanish-American War and surgeon general of the Idaho National Guard; died June 19, aged 88, of senility.

Franz J. Swoboda, Omaha; University of Nebraska College of Medicine, Omaha, 1905; died June 18, aged 68, of cerebral thrombosis.

Samuel L. Thorpe Ⓢ Major, U. S. Army, retired, Seattle; Northwestern University Medical School, Chicago, 1893; entered the medical corps of the U. S. Army as a captain in 1920; retired Sept. 30, 1933 for disability in line of duty; served during World War I; died in Madigan General Hospital, June 4, aged 78.

William A. Tisdale, Seminary, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1890; died in the Methodist Hospital, Hattiesburg, June 7, aged 85.

George Henry Torney Ⓢ Brookline, Mass.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; member of the American Psychiatric Association and the New England Society of Psychiatry; medical director, superintendent and owner of the Bournewood Hospital; died June 1, aged 75, of dissecting aneurysm of the aorta.

Camillo Eugene Volini Ⓢ Chicago; Loyola University School of Medicine, Chicago, 1933; served as president of the Chicago Tuberculosis Society; resigned in January 1948 as superintendent of clinics for the Municipal Tuberculosis Sanatorium, where he had been on the staff for many years; died in Columbus Hospital June 22, aged 40.

Joseph Francis Walsh Ⓢ Eureka, Calif.; Cooper Medical College, San Francisco; 1909; died May 28, aged 63, of heart disease.

Max Wershow, Los Angeles; University of Michigan Medical School, Ann Arbor, 1920; died June 17, aged 60.

Euclid Clarence Wills, Phoenix, Ariz.; Medical College of Virginia, Richmond, 1906; died June 6, aged 63, of coronary disease.

Chester Anderson Witmer Ⓢ Waycross, Ga.; University of Virginia Department of Medicine, Charlottesville, 1911; served in the medical corps of the U. S. Army during World War I; past president of the Ware County Medical Society and the Eighth District Medical Society; city physician; fellow of the American College of Surgeons; chief of staff, Ware County Hospital; local surgeon for the Atlantic Coast Line Railroad; died May 7, aged 60, of mesenteric thrombosis.

Jesse Charles Woodward Ⓢ Payette, Idaho; Gross Medical College, Denver, 1900; died June 23, aged 75, of coronary occlusion.

DIED WHILE IN MILITARY SERVICE

Robert Oscar May, Pittsburgh; Temple University School of Medicine, Philadelphia, 1945; interned at St. Francis Hospital; began active duty as a lieutenant (jg) in the medical corps of the Naval Reserve in April 1946; died in Italy Sept. 26, 1947, aged 27, of injuries received in an automobile accident.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 4, 1948.

Private Practice and the National Health Service

The National Health Service is designed to make the practice of medicine entirely socialistic; however, it has come into force with remarkably little friction. Some trouble has arisen in connection with what are called "health centers." These promise to be a useful innovation by providing buildings where physicians can cooperate and where their time will be saved by a clerical staff undertaking routine duties. The Minister of Health has refused the request of physicians that they should be allowed to treat their private patients at these centers. The general purposes committee of the Birmingham National Health Executive Council is so seriously concerned with this refusal that it proposes to take energetic measures to get the ruling reversed at the first annual meeting of the Executive Councils' Association in London. The objection is made that if the Minister's decision is adhered to it may be impracticable to operate health centers. If physicians are not allowed to treat private patients at health centers they will be forced to maintain at extra expense separate offices and to attend at them. Different offices for private and public patients might cause public patients to regard health centers as charitable institutions. Some physicians have intimated that if the Minister's decision is adhered to most general practitioners will not participate in the health center schemes. This refusal of the Minister is only one symptom of the socialistic Government's antagonism to private practice. There seems little doubt that they would have liked to abolish it and convert the doctors into civil servants. Only the stand made by the profession against payment by salary compelled the Government to accept payment by capitation. It was realized by the profession that payment by salary would only be a step to the reduction of physicians to officials entirely controlled by the state. But this remains a danger of the future, which will probably materialize if socialism remains dominant.

The Government's antagonism to private practice is illustrated by another incident. Those who prefer to remain private patients of physicians can continue to do so, but they will be taxed for the National Health Service exactly as those who use it. The modest request was made on their behalf that, as they had foregone the free doctoring, they might be allowed to obtain the free medicine given to those who use the Service, but the Minister has again refused.

Cost of Dentistry Under the National Health Service

The dentists have more strongly opposed the scheme of the National Health Service than the physicians. In a press interview Mr. Buchanan, secretary of the British Dental Association, states that 30,000 estimates for dental work are being received every day by the Dental Estimates Board and that the average cost is more than \$20. This means that the scheme is now costing more than \$600,000 a day, while the Government estimate for a full year is only \$28,000,000. This means that the scheme is costing more than seven times the Government estimate. Many dentists have a large income, but the present scheme must break down sooner or later, and the Ministry of Health will be driven to a reconsideration of the whole matter. The secretary claims that this result shows the wisdom of the policy of grant-in-aid advocated by the association but rejected by the Ministry of Health. The association is also demanding full clinical freedom and a guarantee that the Minister will not introduce a full time dental service by regulation. At a meeting of the Council of the Association it has been decided to send

a further letter to every member advising him not to enter the National Health Service.

This staggering increase of cost of the dental service is, of course, due to the offer of "something for nothing" which characterizes socialistic schemes. Every one who can possibly do so wants to share in the spoils. It might be rejoined that the service is really not free, as the beneficiaries pay by their weekly contributions, but their payments amount to only part of the cost, the rest being made up by the state. In any case the motive to share in the distribution remains exactly as if no contributions were made. This increased cost holds for all the industries that have been socialized. The cost of coal is more than doubled, and notwithstanding this, a loss has been made in the working of the industry. In state-owned industries no one has any interest in economy or efficiency. Late in the day some of the more intelligent members of the Labor Government have grasped the elementary economic truth that a good output is essential for the prosperity of the country and have appealed to the workers to give this. But the politicians have had to admit that the response was "disappointing." Why should it be otherwise when the men are in no danger of dismissal, as in the case of private enterprise. Altruism is no part of the trade union propaganda on which they are fed.

Returning to the dentists, the Ministry of Health says that 7,000 have joined the service, but the association states that almost the whole of this number can be accounted for by dentists who are not members of the association.

PARIS

(From Our Regular Correspondent)

Aug. 15, 1948.

Research on the Antigens of Koch's Bacillus

Miss Choucroun has made a communication to the National Academy of Medicine on two isolated fractions of Koch's bacillus, one being protein and the other lipopolysaccharide. She obtained them from an oily extract of dead tubercle bacilli precipitated by the addition of dioxane. The mixture of those two substances dissolves in chloroform to which is added 5 per cent methanol, and their separation is effected by petroleum ether. The author has noted that the lipopolysaccharide fraction plays an important part in the development of hypersensitivity to tuberculin. The purified protein fraction injected into guinea pigs has no sensitizing power, but 20 micrograms of lipopolysaccharide added to 100 micrograms of the proteinic substance is sufficient to give it a sensitizing capacity. Boissevain and Schaffer have brought to light the relation between the acid resistance of Koch's bacillus and its sensitizing capacity; rendered non-acid-resisting by acid hydrolysis, it loses at the same time its sensitizing power. Miss Choucroun has proved that the liposaccharide is the factor responsible for this acid resistance. She found in the products of hydrolysis of acid-resisting bacilli the products of hydrolysis of lipopolysaccharide, mycolic acid and sugars, and, moreover, she has been able to give non-acid-resisting "skeletons" capacity of acid resistance by adding to them the whole lipopolysaccharide, or the mycolic acid and its sugar. The lipopolysaccharide fraction is also the only antigenic complex; i. e., the only one capable of determining the formation of polysaccharide antibodies. The author suggests that those polysaccharide antibodies play an important part in the mechanism of acquired resistance.

Treatment of Eczema

The first works on the treatment of infantile eczema by unsaturated fatty acids (reported to the Medical Society of the Paris Hospitals) have just been published in France. E. Azerad and Crupier have treated 30 children with satisfactory results. They emphasize the remarkable eutrophic effect of this diet. The percentage of linoleic acid in lard varying according to

various factors, the authors have chosen to substitute for lard purified preparations of linoleic acid, or even of an ester of this acid easier to administer and the action of which appears more rapid. J. Charpy (Dijon) has presented his results of three years of experiments in 1,200 cases. The author obtained conclusive results in 80 per cent of cases of various forms of this disease. He gives doses of 20 to 100 Gm. of lard per day according to age and weight. The simultaneous administration of certain elements of the B complex, especially vitamin B₆ in the dose of 0.10 to 1 or 2 Gm. per day has a synergic effect, permitting at the same time the reduction of the dose of unsaturated fatty acids. For the treatment of certain true or allergic eczemas in the infant, the author studied replacing vitamin B₆ with vitamin B₃. J. Champougny and E. Le Breton have recently proved that vitamins B₆, B₃ and B₅ are coenzymes of the "desaturase" of superior fatty acids, but this process occurs only after a previous phosphorylation. The author is studying the way of insuring the maximum of this phosphorylation in the organism, through which he expects an increase of the therapeutic effect. With unsaturated fatty acids and vitamin B₆ the author associated oral intestinal vaccines which seem to increase the effectiveness of the two essential elements of this therapy. He limits the local treatment to dressing with lard or with a mixture of vitamin B₆, wool fat and lard. He insists on the necessity of eliminating allergens, which may, by external contact or by internal route, produce the cutaneous imbalance.

New Treatment of Arteritis of the Limbs

With a view to measuring the blood circulation of limbs in arteritis, Lemaire, Loeper and Housset injected oxygen into the arterial trunk; they noted improvement in most of the patients. They have just reported to the National Academy of Medicine their study of 15 patients: 5 with diabetic arteritis, 7 with senile arteritis, 2 with specific arteritis and 1 with acute arteritis. The injections were made in the femoral artery at the crural arcade. They at first used gaseous oxygen in a volume of 70 to 200 cc. injected in one to two minutes. Recently, in order to facilitate the injection, the authors used 2 cc. of hydrogen peroxide at 30 volumes mixed with 3 cc. of isotonic sodium chloride solution, which yields roughly 90 cc. gaseous oxygen. The results of this treatment, lasting from one to three weeks, are striking: disappearance of the pain and cramp in the calves when walking and in the decubitus position. The effectiveness of this therapy is much more lasting than that of the classic vasodilators. During the injection, the patient experiences sensations of tingling and of burning in the foot and calf, followed either by pallor of the limb or by disks of erythrosis on the leg, scrotum and even the abdomen; the same phenomena, but less accentuated, occur sometimes on the limb which has not received an injection. A few hours afterward the patient has a sensation of heat which persists. Immediately after the injection or later the oscillometric index is not modified; the cutaneous temperature falls for fifteen to thirty minutes and then rises again, and surpasses the previous rate by 2 to 3 C. Failures are rare. Reactions, varying from one patient to another, may occur in the form of lumbago, imperative desire to urinate, violent colic with emission of several stools, slight shivering, temperature of 38 C. (100.4 F.) and slight but temporary fall of the arterial pressure. Only one fatal accident has occurred, in a 55 year old diabetic patient with arteritis of the superior and inferior limbs, who after an efficacious injection, without incident, in the leg was while seated given another one in the subclavian artery. A few seconds, after the beginning of the injection a tonic crisis occurred, then a hemiplegic coma and death a few hours afterward. The authors emphasize that such accidents would never occur if the precaution is taken to put the patient in the Trendelenburg position. Provoked gaseous

emboli in the arteries of the limbs are without any danger whatever, oxygen combining rapidly with hemoglobin. The authors think that the therapeutic effect of this method is due either to compensation for the loss of oxygen due to the slowing of circulation in the arterioles or to reactivation of cellular cytochromes. Moreover, they say such gaseous emboli provoke an arteriolo-capillary vasodilation.

OSLO

(From Our Regular Correspondent)

Sept. 8, 1948.

Don't Just Listen! Take Notes!

Early every September, Oslo suddenly turns academic and university conscious. Everywhere one sees students' caps, with their heavy black silk tassels, crowning thousands of heads, some gray or bald. This emblem of the freemasonry among the intellectuals from all parts of Norway culminates in the University Hall, where this year, on September 2, Professor Otto Lous Mohr, rector of the university, delivered an address. He pointed out that in the early days of the university 60 per cent of the entrants came from the professional classes. Now only 14 per cent do so. Now an academic career is open to all with brains, and 9 per cent come from the homes of farmers and fishermen. Every fifth student is now a woman. Professor Mohr referred with grateful appreciation to the help given to the university by various American organizations, including the Rockefeller Foundation, which has provided not only fellowships and travel grants, but also funds for the purchase of scientific publications. Professor Mohr awarded the much coveted prizes of the year, including the Monrad-Krohn prize for neurologic research, won this year by Dr. Sigvald Refsum for his work on heredopathia atactica polyneuritiformis.

In his first lecture of the autumn term, on Saturday, Sept. 4, Professor Olav Hanssen welcomed the occupants of crowded benches to the study of medicine. Then he sparkled for a solid hour. Behind the sparkle and the whimsical anecdotes was much shrewd advice such as: "Don't just sit there and listen! Take notes all the time!" Then he demonstrated a patient who had been knocked down by a cyclist and had obscure signs and symptoms referred to one leg. Examined successively by a physician, a surgeon and a psychiatrist, he had been suspected of a compensation-hungry neurosis. What a pity that neither the physician nor the surgeon nor the psychiatrist had consented to the roentgenologic examination for which the patient had pleaded! For when at last a roentgenogram was taken, it showed a fracture of the fibula. If only we could learn to take notes of all we hear and see, and take roentgenograms whenever we are in doubt!

Professor Kristine Bonnevie

Miss Kristine Bonnevie, the first woman to gain the title of professor at the University of Oslo, has just passed away, much loved and greatly honored. She was born in Oslo in 1872, and it was here that she passed most of her life, although she was of international stature and had worked in Germany, Switzerland and the United States. She took her degree of Doctor of Philosophy in 1906 and was appointed professor of zoology in 1912. Her scientific interests covered a wide field, and she made important contributions to embryology and the problems of heredity. As recently as last summer, at the age of 76, she took part in the International Congress on Heredity in Stockholm, then as always rubbing shoulders with fellow scientists from all over the world with that unassuming ease which made her such an attractive fellow traveler in life.

To the younger generation and in wide circles, Professor Bonnevie was the beloved "Tante Kristine" to whom one came with one's troubles, whether they were personal or scientific.

Though she never married, she was the most motherly of souls, always on the lookout for an opportunity to give a helping hand when one was in difficulties. During World War I she organized in a cellar in one of the university buildings a kitchen restaurant in which students were provided with meals at cost price. During World War II, though no longer holding the chair of zoology, she again fed young students with unobtrusive efficiency. They showed their appreciation by electing her to places of honor in their various associations, and she was for some years the chairman of the women students' choir. But she was, perhaps, at her best when at work at the biologic station in the Oslo fjord, clad as a seaman, sou'wester and all, reveling in the riches dredged up from the bottom of the sea, and sharing them with her students with open-handed generosity.

Sven Oftedal

He was still rather young when he died, but his career was so brilliant and his personality so charming and forceful that he has left an indelible impression. He was born in Stavanger in 1905 into a family already noted for intellectual gifts. After qualifying as a doctor in 1930 he served as an intern successively in a general hospital, a private asylum and a Red Cross sanatorium. Then, in 1933, he settled down in his native town as a general practitioner. His success in this field did not prevent his taking an active interest in local government, and from 1933 onward he took a prominent part in social work in Stavanger. When the Germans invaded Norway, his glowing patriotism qualified him for arrest as a hostage for his town. A little later the Germans removed this troublesome patriot to the concentration camp at Grini, where, as everywhere else, he soon became a leader of his fellow beings. A pestilential fellow from the German point of view, he had yet to be employed in key positions at Grini. Set free after some time on probation, he became such a nuisance and even danger to the Germans that he had to be arrested again, and, after they had tried to keep him quiet in various prisons in Norway, they sent him in 1943 to the notorious concentration camp of Sachsenhausen in Germany. Here he remained until the end of the war, always the acknowledged leader of his fellow sufferers. On Oftedal's return to Norway in 1945, his appointment to high office was a foregone conclusion. As a member of the Government and head of the Department for Social Affairs, he took an active part during the next three years in the social legislation which has had such far reaching effects in the postwar period. He was still in office and had been on sick leave for only a few weeks when an infarct of the heart ended his career.

SPAIN

(From Our Regular Correspondent) Aug. 12, 1948.

National Institute of Medical Science

The National Institute of Medical Science was founded as a dependency of the Higher Council for Scientific Research by Decree of Dec. 16, 1942, with the object of coordinating the work of all state research centers and more especially of the faculties of medicine in Spanish universities. During its five years of existence and development, the number of its departments has progressively increased, as well as the amount of work done. Twenty-one departments are functioning at present, dealing with the following disciplines and specialties: morphology, human and comparative physiology, immunology and microbiology, experimental pharmacology, metabolic pathology, digestive pathology, internal medicine, experimental surgery, legal medicine and toxicology, medical biochemistry and history of medicine. As a general rule, these departments are linked up with the university departments or with other recognized teaching centers outside the university, such as the Postgraduate Institute at Valdecilla (Santander) and the Basurto Hospital at Bilbao. The institute publishes a quarterly volume comprising

papers on research and called *Trabajos del Instituto de Ciencias Medicas*, of which ten or eleven issues have already appeared, full of important original papers.

The institute looks after the training and guidance of young medical research workers and sends many of them to research centers abroad to acquire knowledge and practice of basic techniques and principles on which to found their future work in Spain. In this respect, the institute fills the place of the old Studies Extension Board.

The head of the institute is the dean of the Madrid Faculty of Medicine, Professor F. Enriquez de Salamanca, who has been doing research since 1925 on the examination and physiology of the human stomach on the same lines as the work started by Lewin and the Katsch school somewhat later, in 1927.

He has been able to determine the volume of secretion and has succeeded in measuring for the first time the rate of secretion in the course of digestion. He has ascertained the variability of the concentration of gastric juice, which may go from 0.5 Gm. per thousand of chloride to more than 6 Gm. per thousand. He has observed a parallelism between the rate of secretion and chloride concentration, but as between different days in the same subject and as between various subjects compared with one another, he found that the quantity of juice was in inverse ratio to the concentration and, in all of them, at the end of digestion there was an even more abundant secretion, though this was poor in chloride and acid.

GERMANY

(From Our Regular Correspondent)

Aug. 31, 1948.

Postwar Goiter in Germany

After the first world war, German physicians described an increased incidence of goiter, even in parts of the country normally free from goiter, like Nuremberg, the Ruhr district and the Northern German plain. In 1924, there was still a high percentage of patients with goiter among adolescents. It decreased markedly toward the end of the twenties.

The same trend has been noted during and after the second world war. This time, however, the situation is complicated by the influx of evacuees and refugees into these districts from parts of former Germany where goiter has always been endemic, and also by the fact that a large proportion of German youths were evacuated from cities and sent to different parts of the country during the war, some of which are also goiter districts. However, various authors writing on the subject have stressed that the appearance of endemic goiter is by no means restricted to such cases. Comparisons of groups of children of early school age showed a moderate increase of the size of the thyroid gland in less than 1 per cent in the late twenties, against more than 20 per cent recently. The same case rate is found in children 11 to 12 years of age. If old and new residents of Central Germany are counted separately, the figures show that among the static group about one fifth and among the refugee group about one third of the children have enlarged thyroid glands.

The cause of this situation is not well understood. There seems to be a lower incidence of goiter in the socially higher strata; therefore, lack of proteins has been considered to be an etiologic factor. Treatment with iodine is of doubtful value. It has been said that these postwar goiters in adolescents are often connected with a delayed sexual development. This would point to an advisability of polyhormonal treatment.

Infantile Paralysis in Bavaria

A serious outbreak of poliomyelitis has occurred in all of Bavaria, particularly in the towns of Hof, Regensburg and Straubing. Health authorities caution that the peak may not be reached before the end of this month. Within one week, the number of affected persons rose from 250 to 410. Eighteen deaths were reported.

Correspondence

MEDICAL EDUCATION IN CHILE

To the Editor:—During the month of July of this year I had the opportunity of visiting most of the important hospitals and medical institutions in Santiago de Chile. It was possible during this time to analyze the organization of their medical services. I was greatly impressed with the very high plane of teaching of medicine in the University of Chile.

Internal medicine is taught on four major services, each headed by a professor of medicine. Two of these services are in the Hospital del Salvador. I particularly wish to comment on the high character of medical teaching on the services of Drs. Hernan Allesandri and Armas Cruz of that hospital because I had the opportunity of observing the work on these two services closely. I have no reason to feel that the medical services of Dr. Garreton at the Hospital San Borja and of Dr. Prado Tagle at the Hospital San Vicente are in any way inferior to the services at the Hospital del Salvador, with which I am more familiar.

On both these services at the Hospital del Salvador, Drs. Allesandri and Armas Cruz have associated themselves with a group of young physicians well trained in the specialties of internal medicine. Many of these young men have been trained in the United States. On these two services, gastroenterology, in which I was particularly interested, was integrated into the medical services and supervised by several well trained young gastroenterologic internists. These two departments of gastroenterology were as well organized as any that I have seen in this country. All the teaching devices utilized in gastroenterology were on hand, and they were applied by well trained men. I was impressed by the close integration of all divisions in medicine under the leadership of these two excellent physicians. Research projects were actively going on in many of the subdivisions of medicine, and the close integration of the various specialties afforded an ideal setup for the carrying out of important clinical research projects.

The criticism often made of Latin American medicine concerning the continuation of older European methods of practice and teaching certainly does not apply to the teaching of internal medicine in the University of Chile in Santiago. The chiefs of the medical services are well versed in modern American medicine, and in some respects their organization is better than that on some of our medical services in this country. For example, all deceased patients are subjected to autopsy by a well trained pathologist assigned to each of these medical services. Each week the students working on both services have the opportunity of attending a medical pathologic conference in which all cases are completely reviewed and discussed. The clinical, roentgenologic and laboratory features of each case are presented and discussed before the necropsy findings are given. Because of the universal autopsy system and the full time services of a pathologist on each medical service, this material can be ideally integrated and important clinical pathologic studies in many diseases are made possible. For example, the analysis of a tremendous number of cases of hepatic cirrhosis, which is common in Chile, is now being prepared on the service of Dr. Armas Cruz and important papers dealing with a large experience with infectious hepatitis are being prepared by Drs. Allesandri and Ducci.

Finally, I should like to comment on the fine scientific spirit and on the medical camaraderie, which are so obvious to the visitor in Santiago. These Chileños are practicing *factual* medicine on a high plane, and a closer association with our colleagues in Chile is highly desirable. Important contributions in medicine may be anticipated from this newly developed medical center.

Before closing I should like to pay my respects to Dr. Gandi, the representative of the Institute of Inter-American Affairs in Chile. This gentleman, ideally suited by personality and training to the position which he holds, has contributed greatly to the healthy spirit of collaboration between the medical scientists of Chile and those of the United States.

H. L. BOCKUS, M.D., Philadelphia.

EFFECT OF PROCAINE ON THE HEART

To the Editor:—The hazards attending the intravenous administration of procaine, recently advocated in the treatment of bronchial asthma and other conditions, have been pointed out by Waldbott in *THE JOURNAL*, April 26, 1947, and again in *Queries and Minor Notes* in the Aug. 21, 1948 issue.

The hazards of this procedure are further indicated by our recent experimental electrocardiographic observations in the dog (*Am. Heart Journal*, in press). These studies revealed that intravenously administered procaine is capable of exerting a direct effect on the heart. The most striking result was a powerful depressant action on the conduction system, manifested by a tendency to prolongation of the P-R and QRS intervals, and leading to the development of auriculoventricular and intraventricular block. Other findings suggested some alteration in the invasion and retreat patterns of impulse spread, indicating an effect on the myocardium per se. The deleterious effects of the drug on the heart appeared to bear a close relation to the rapidity of the injection and the quantity employed; in 1 of our animals rapid intravenous administration of a relatively large dose induced a state of "chaotic heart action" with multiple ectopic pacemakers. These investigations were on experimental animals. While dosage-toxicity correlations, with respect to cardiac effects, have not been made in man, it is likely that a pharmacologic parallelism exists. The intravenous injection of procaine consequently should be undertaken with additional caution in persons with inflammatory or "degenerative" cardiac lesions.

MORRIS WILBURNE, M.D.

MILTON H. UHLEY, M.D.

Beverly Hills, Calif.

PENICILLIN AND MALARIA

To the Editor:—I was interested to read in the Aug. 28, 1948 issue of *THE JOURNAL* an abstract from the *Indian Medical Gazette* (82:511-558 [Sept.] 1947) of an article by Deshmukh which states that penicillin seems to have a synergistic action in the treatment of acute attacks of malaria and that "penicillin controls the pre-erythrocytic stage of the malarial parasite." There is not a shred of evidence that I know of, unless one accepts the conclusions of Deshmukh, that penicillin has any effect on malaria in man. On the contrary, there is evidence that penicillin has no effect.

During the war years I had an opportunity, during studies of new antimalarials, to observe for long periods of time a great many patients with relapsing vivax malaria. Many of them were given penicillin for surgical or medical conditions other than malaria, and many suffered malarial relapses during and after administration of penicillin. So much for the pre-erythrocytic stage.

During the past year I have participated in a study of a method of inducing malaria with parasitized blood preserved by freezing. In approximately 20 cases of neurosyphilis with induced malaria penicillin was given during the incubation period and the course of the malarial attack. There was no apparent effect of the penicillin on the development or subsequent course of malaria.

GEORGE M. SAUNDERS, M.D., St. Louis.

Medical Economics

SCOTTISH EXPERIMENTS IN SOCIAL MEDICINE

A Review by Frank G. Dickinson, Ph.D.,
Director, Bureau of Medical Economic Research

The Department of Health for Scotland, under the direction of Sir Andrew Davidson, has undertaken several studies and experiments.¹ Analysis of morbidity statistics for the immediate prewar period revealed a surprising amount of chronic incapacity among the working population, particularly at ages under 40 years. Of 25,900,000 working days lost by 1,800,000 insured wage earners in the year ending June 30, 1948, 44 per cent was due to illnesses rendering 31,000 persons unfit for work throughout the entire year. Clinical data were obtained for over 50,000 patients incapacitated for three months or longer; 1,000 of these cases were subjected to intensive study. Results indicated the importance of early diagnosis and treatment in conserving the working capacity of wage earners; they also showed a need for periodic review of diagnosis and treatment in prolonged illnesses, with close cooperation between personal physician and specialist services.

AN EXPERIMENT IN PREVENTIVE MEDICINE

Early in 1942, the department instituted a program to prevent chronic invalidism by minimizing breakdown in the health of war workers. Within one and one-half years some 5,000 workers were given special clinical examination and admitted to war emergency base hospitals for detailed investigation or to country mansions for intensive convalescence. Most of these patients showed vague ill health, some degree of debility and often anxiety states due to overwork. Their response to treatment indicated the value of rest and recreation in combating fatigue which might otherwise lead to prolonged physical and mental illness.

AN EXPERIMENT IN REHABILITATION

In January 1943, the department instituted a scheme to return the sick and injured to active employment. A fitness center for disabled miners was opened; other workers were later admitted. The program consisted of activity by the patient under the direction of a physician. Average length of stay in the center is from fifty to eighty days; the discharged patient is checked by follow-ups after two and six months. Results up to June 1947 show that of 1,900 miners treated, 63 per cent were able to continue their former work, 19 per cent were fit for light work, 5 per cent were fit for alternative employment and only 1 per cent were unfit at the end of the course. Of 270 other workers treated, 69 per cent returned to their former work and less than 1 per cent remained unfit for employment. Rehabilitation methods cannot cover deficiencies in surgical or medical treatment, and must be varied with the needs of the patient. Moreover, the study indicates the rehabilitative value of returning the patient to work for which he is fit as soon as possible.

MEDICAL CARE IN A LARGE RURAL AREA

In 1912, a committee of the British Parliament made a study of medical care in the Highlands and Islands, an area including almost half of the land surface of Scotland, lying to the north and west and inhabited by 300,000 persons. Due to the sparseness and poverty of the population, inadequate transportation and communication, and geographic and climatic difficulties, medical service was uncertain for the people and hazardous for the physician. To remedy this situation, Parliament established the Highlands and Islands Medical Service Fund, under which grants were approved for (1) physicians, (2) nursing services, (3) specialist, hospital and ambulance services and (4) telegraph and telephone services. The scheme endeavors to supply necessary medical services to every person in the area and to assure each practitioner a definite minimum net income. "Scheme patients" unable to pay regular fees and not covered by the National Health Insurance scheme receive medical care

on the basis of a schedule of modified fees. To compensate for his reduced earnings, the Highlands and Islands doctor receives a yearly grant from the Medical Service Fund, along with financial aid for housing and facilities for holiday leave and postgraduate courses.

Hospital and specialist services have been developed in the area with the aid of grants from the Medical Service Fund. Ambulance services have been provided to transport patients to and from hospitals. County and district nursing associations have been organized to provide nurses fully qualified in general nursing, obstetrics and domiciliary work. Grants from the fund assure each nurse a reasonable salary, suitable residence, means of transport and telephone service.

The declared aim of the Department of Health for Scotland has been to provide necessary finance and a flexible and friendly central administration. Considerable evidence is cited to attest to the success of the Highlands and Islands Medical Service program. The standard of health in the Highlands and Islands area has risen steadily in the past thirty years. Facilities for medical care are now available to inhabitants in the most remote sections. The department has had no difficulty in obtaining qualified physicians, specialists and nurses to participate in the scheme. The Highlands and Islands practitioners have recently expressed their satisfaction with the administrative handling of the program. Judging by this report, remarkable progress has been made in the provision of medical care in this difficult and extensive rural area of Scotland.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Application of Res Ipsa Loquitur in Case of Silver Nitrate Burn.—The plaintiff sued for damages alleged to have resulted from the negligence of the defendant physician. From a judgment for the defendant, the plaintiff appealed to the district court of appeal, first district, division 1, California.

The plaintiff testified that, because of a varicose vein condition, she had visited the defendant physician and that he had directed her to enter a hospital. In the hospital the defendant had her stand beside the bed while he outlined on her legs certain veins that were to be surgically removed. The marks were made with a silver nitrate pencil which the nurse had brought to the defendant, and there were four such markings on each leg, two above the knee and two below. Shortly after the markings were put on, the plaintiff's legs began to burn and to become very inflamed around the areas marked by the defendant, and in a short time blisters formed at such areas. The pain was very severe. When the defendant physician arrived for the operation the next morning he examined her legs and told her that the operation would have to be postponed because the burns were too severe. The defendant, called as a witness by the plaintiff, admitted having made the markings on the plaintiff's legs and said that the purpose of such markings was to outline the veins to be removed. When a patient is lying down on the operating table the veins tend to relax and disappear, but when the patient is standing the veins stand out and are easily seen. The defendant said that ordinarily there is no unfavorable reaction from the application of silver nitrate but he admitted that the solution applied to some persons' legs did cause burns and that he did not know ahead of time whether or not the plaintiff was susceptible to such solution, not having made any prior test. He said that he procured the silver nitrate from the stock supply of the hospital, that he did not know who manufactured it and that he had made no attempt to ascertain that fact. He was not aware of the potency of the solution, nor did he attempt to investigate after the patient was burned to ascertain the strength of the solution. The defendant also testified that it was the common practice of doctors in San Francisco to mark off the area to be operated on with a silver nitrate solution and that it was also standard practice to mark off the operating area without first making any tests.

1. Davidson, A.: Scottish Experiments in Social Medicine, Bull. Johns Hopkins Hosp. 82: 479-495 (April) 1948.

He stated that prior to his treatment of the plaintiff he had performed three or four hundred such operations and that everything he did in this case was performed according to the ordinary standard of practice of surgeons in San Francisco.

On the basis of this evidence the trial court granted the defendant's motion for nonsuit and pointed out that the burden is on the plaintiff in such a case to show that the doctor did not possess and use the degree of skill possessed by similar practitioners in the same locality. On appeal the plaintiff urged that the doctrine of *res ipsa loquitur* was applicable to this case. The doctrine of *res ipsa loquitur*, said the Supreme Court, applies where the accident that occurred was such that in the ordinary course of events, the defendant using ordinary care, it would not have happened and where the instrumentality causing the accident was under the control of the defendant. The first requirement, continued the court, is clearly met in the instant case. Certainly it cannot be contended that the severe burning of patients is the normal result of the preparatory treatment for operation to remove varicose veins. The defendant contended, however, that the doctrine was not applicable in this case because it was not shown that the doctor had exclusive control of the silver nitrate solution, and in this connection the defendant pointed out that the evidence showed that the hospital furnished the silver nitrate pencil to the defendant. The evidence also showed, however, that the nurse asked the doctor if the equipment so furnished was what he desired and the doctor replied that it was.

After citing a number of other cases in which the doctrine of *res ipsa loquitur* was applied to malpractice proceedings the Supreme Court said that the doctrine did apply in this case and the physician was held liable. The judgment in favor of the defendant was therefore reversed.—*Hurt v. Susnow*, 192 P. (2d) 771 (Calif., 1948).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II*. Various Centers, Feb., June, and Sept., 1949. *Part II*. April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa. *Part III*. Boston & New York, Autumn. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*, Oct. 18. *Oral*, Chicago, Oct. 13-15; Philadelphia, Nov. 3-5; San Francisco, date not set. Candidates now eligible for the orals cannot be promised a place in 1949. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral*, Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I*. Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written*, St. Louis, Oct. 15-19. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I*. Various Centers, April & May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral*, Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF SURGERY: *Written*. Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Feb. 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18, Minn.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination*, Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Little Rock*, Nov. 4-5. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic Examination*, Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St. Little Rock.

CALIFORNIA: *Oral*, Los Angeles, Nov. 20-21. *Written*, Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

CONNECTICUT: * *Examination*, Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination*, Derby, Nov. 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

FLORIDA: * *Examination*, Jacksonville, Nov. 28-30. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GEORGIA: *Examination*, Atlanta, Oct. 12-13. *Endorsement*, Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

GUAM: *Endorsement*, Agaña, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

HAWAII: *Examination*, Honolulu, Jan. 10-13. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu 53.

IDaho: Boise, Jan. 10-12. Dir., Bureau of Occupational Licenses, Miss Estella S. Mulliner, State House, Boise.

INDIANA: *Examination*, Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

IOWA: * *Examination*, Des Moines, Dec. 6-8. *Endorsement*, Des Moines, Dec. 6. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination*, Louisville, Dec. 13-15. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

LOUISIANA: *Examination*, New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Ilerbia Bank Bldg., New Orleans 12. *Homeopathic Examination*, Baton Rouge, subject to call. Sec., Dr. F. H. Hardenstein, 715 Pere Marquette Bldg., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination*, Baltimore, Dec. 14-17. *Endorsement*, At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination*, Baltimore, Dec. 7-8. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination*, Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. G. L. Schadt, 413 E. State House, Boston.

MICHIGAN: * *Examination*, Lansing, Oct. 13-15. *Endorsement*, Oct. 12. Sec., Dr. J. E. McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 19-21. Sec., Dr. J. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Reciprocity*, Jackson, Dec. 6. Exec. Officer, State Board of Health, Dr. Felix J. Underwood, Jackson.

MISSOURI: St. Louis, Oct. 25-27. Exec. Sec., Mr. John A. Hailey, P.O. Box 4, Jefferson City, Mo.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW HAMPSHIRE: Concord, March 10. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination*, Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

NORTH CAROLINA: *Endorsement*, Wilson, Oct. 25. Sec., Dr. Ivan M. Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: *Examination*, Grand Forks, Jan. 4-7. Act. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination*, Columbus, Dec. 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Reciprocity*, Oklahoma City, Oct. 24-25. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination*, Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH CAROLINA: *Endorsement*, Dec. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, Medical Arts Bldg., Fort Worth.

UTAH: *Examination*, Salt Lake City, July. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination*, Burlington, Feb. Sec., Dr. F. J. Lawless, Richford.

VIRGIN ISLANDS: *Examination*, Charlotte Amalie, Dec. 8-9. Comm., Dr. Christian R. Moorhead, Charlotte Amalie.

VIRGINIA: *Examination*, Richmond, Dec. 3-4. *Endorsement*, Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: *Examination*, Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

FLORIDA: *Examination*, Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MINNESOTA: *Examination*, Jan., April, June and Oct. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination*, Portland, Dec. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: *Examination*, Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

WASHINGTON: Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: *Examination*, Milwaukee, Dec. 4. Final date for filing application is Nov. 27. Sec., Prof. W. H. Barber, Scott & Watson St., Ripon.

Current Medical Literature

AMERICAN

The Association Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

17:361-404 (May) 1948

Scalenus Anticus Syndrome: Consideration of Diagnosis and Treatment. N. Bograd and G. S. Peters.—p. 361.

Evidence of Contact Spread of Poliomyelitis. A. E. Casey.—p. 365.

Pregnancy in Rudimentary Horn with Case Report. T. J. Payne.—p. 367.

Observations on Caudal and Intravenous Analgesia in Obstetrics. K. N. Gold.—p. 369.

17:405-464 (June) 1948

Clinical Picture of Auricular Fibrillation. C. K. Weil.—p. 405.

Mental Ill-Health! Time to Immunize! Job for Education. J. Leese.—p. 410.

Treatment of Brill's Fever. J. T. Grimes.—p. 416.

American Heart Journal, St. Louis

35:689-872 (May) 1948

Studies on Coronary Circulation: III. Collateral Circulation of Heating Human and Dog Hearts with Coronary Occlusion. M. Prinzmetal, H. C. Bergman, H. E. Kruger, Lois L. Schwartz and others.—p. 689.

*Diagnosis of Mitral Insufficiency in Rheumatic Children. Ann G. Kuttner and M. Markowitz.—p. 718.

Relation of Unipolar Lamb Leads to Precordial and Esophageal Leads. G. B. Myers and H. A. Klein.—p. 727.

New Electronic Method for Simultaneous Recording of Ballistocardiograph and Electrocardiograph. H. R. Brown Jr. and R. Pearson.—p. 756.

Seasonal Variations in Heart and Coronary Disease as Related to Various Environmental Factors. H. R. Brown Jr. and R. Pearson.—p. 763.

Note on Importance of Proper Technic in Recording of Precordial Electrocardiogram: Description of Important Source of Error. R. F. Ziegler.—p. 769.

Observations on Effects on Lungs of Respiratory Air Flow Resistance in Dogs with Special Reference to Vagotomy. S. Zinberg, G. Nudell, W. G. Kubicek and M. B. Visser.—p. 774.

Measurement of Total Transverse Diameter of Heart by Direct Percussion. W. D. Stroud, M. W. Stroud III and D. S. Marshall.—p. 780.

Intensity and Duration of Action of Quinidine Sulfate in Auricular Fibrillation and Flutter as Measured by Rate of Circus Movement. R. Wegria.—p. 787.

Experiences with New Synthetic Analgesic, Amidone: Its Action on Ischemic Pains of Occlusive Arterial Diseases. R. J. Popkin.—p. 793.

Electrocardiographic Changes in Pulmonary Collapse Therapy: Artificial Pneumothorax. D. Feldman and C. Silverberg.—p. 800.

Mitral Insufficiency in Rheumatic Children.—The material analyzed by Kuttner and Markowitz was obtained from the records of patients who received convalescent care at a sanatorium for the care and study of children with rheumatic heart disease. Children 6 to 15 years of age, with histories of one or more attacks of rheumatic fever or chorea, were observed for various lengths of time ranging from two months to two years. Following discharge, each child was seen annually at the after-care clinic. The patients included in this study were followed for an average of eight years. The records of 315 rheumatic patients were selected for study. Group 1 consisted of 171 patients classified as having potential and possible rheumatic heart disease. These patients had soft, poorly transmitted, apical systolic murmurs and no evidence of cardiac enlargement. Group 2 consisted of 144 given a diagnosis at the time of discharge of mitral insufficiency. Of the 144 patients with mitral insufficiency, in 69 organic heart disease has developed. Of these, 13 died as a result of their rheumatic infection and 7 succumbed to bacterial endocarditis. Ninety-two of these 144 patients had a history of multiple attacks prior to the period of observation and 28 had rheumatic recurrences following sanatorium care. Of the 171 patients with potential and possible rheumatic heart disease, in 22 evidence developed of organic

heart disease. None of the children in this group died. Fifty-two of the 171 patients had a history of multiple attacks prior to the period of observation and 12 had rheumatic recurrences following sanatorium care. The striking difference between the two groups in this progression of the disease and the mortality rate indicates that the intensity of the murmur is of prognostic significance. The diagnosis of mitral insufficiency, based on a loud blowing apical systolic murmur, is justified in children, even in the absence of demonstrable cardiac enlargement.

American Journal of Pathology, Ann Arbor, Mich.

24:451-728 (May) 1948

Metastatic Calcification Produced in Dogs by Hypervitaminosis D and Halphagia. R. M. Muligan and F. L. Strickler.—p. 451.

Cicatrizing Enteritis (Regional Ileitis) as Pathologic Entity: Analysis of 120 Cases. S. Warren and S. C. Sommers.—p. 475.

Hepatic and Renal Injury with Calcium Deposits and Cirrhosis Produced in Rats by Pyridine. J. H. Baxter.—p. 503.

Biliary Xanthomatosis (Xanthomatous Biliary Cirrhosis). H. E. McMahon.—p. 527.

Cytologic Studies with Phase Microscope: I. Formation of "Blisters" on Cells in Suspension (Potocytosis), with Observations on Nature of Cellular Membrane. H. U. Zollinger.—p. 545.

Id.: II. Mitochondria and Other Cytoplasmic Constituents under Various Experimental Conditions. H. U. Zollinger.—p. 569.

Melanomas of Childhood. Sophie Spitz.—p. 591.

Lesions of Schistosomiasis Japonica. M. M. Bracken, W. R. Bailey Jr. and H. M. Thomas Jr.—p. 611.

Significance of Local Vascular Phenomena in Production of Ischemic Necrosis in Skeletal Muscle. J. W. Harnan.—p. 625.

Periodic Acid Routine Applied to Kidney. J. F. A. McManus.—p. 643.

Epithelium-like Inclusions in Heart. S. M. Rabson and L. J. Thill.—p. 655.

Annals of Internal Medicine, Lancaster, Pa.

28:887-1074 (May) 1948

Emetine Toxicity in Man: Studies on Nature of Early Toxic Manifestations, Their Relation to Dose Level, and Their Significance in Determining Safe Dosage. G. Klatskin and H. Friedman.—p. 892.

*Experience with Schemm Regimen in Treatment of Congestive Heart Failure. A. A. Newman and H. J. Stewart.—p. 916.

Clinical Aspects of Carcinoma of Cecum and Ascending Colon: Report of 60 Cases. C. H. Brown, J. R. Colvert and B. E. Brush.—p. 940.

Course of Beriberi Heart Disease in American Prisoners-of-War in Japan. R. J. Allenman and G. H. Stollerman.—p. 949.

*Myocarditis in Instances of Pneumonia. O. Saphir and G. D. Amromin.—p. 963.

*Role of Hormones in Treatment of Obesity. M. M. Kunde.—p. 971.

Clinical and Electrocardiographic Study of Paroxysmal Ventricular Tachycardia and Its Management. G. R. Herrmann and M. R. Hejtmancik.—p. 989.

Appendicitis and Upper Respiratory Infection: Report of 18 Cases at Sea. G. L. Calvey.—p. 998.

Friedlander Bacillus Meningitis: Report of 7 Cases with 2 Recoveries. S. S. Jacob and F. H. Top.—p. 1003.

Adreno-Sympathogenic Heart Disease (Neurohormonal Factors in Pathogenesis and Treatment). W. Raab.—p. 1010.

Schemm Regimen in Congestive Heart Failure.—Newman and Stewart analyzed the diuretic effect of the Schemm regimen, which consists of a low sodium, neutral and acid ash diet, in patients with congestive heart failure. Many cases were found unsuitable for trial with the Schemm regimen. Of 30 cases originally studied, only 9 could be considered suitable for analysis, and in at least half of these complications developed which interfered at some time with the proper maintenance of the regimen. Ascites proved to be the most difficult manifestation of heart failure to treat. Seven of the 9 patients fared better on the usual regimen of restricted salt and limited fluids with frequent administration of mercuraphylline than they did on the Schemm regimen when fluids were forced and no mercurial diuretics were given. The authors say that in their experience the Schemm regimen has not been successful as a diuretic procedure in the treatment of heart failure.

Myocarditis in Pneumonia.—Saphir and Amromin studied by means of multiple microscopic sections the hearts of 67 patients with bronchopneumonia, involving at least one lobe of the lungs. Twenty-six of these revealed inflammatory changes sufficient to warrant the term "myocarditis." Fifteen were classified as acute myocarditis, 3 as acute serous, and 8 as subacute myocarditis. The outstanding clinical criteria pointing to the diagnosis were found to be: disproportion between the pulse rate and the temperature, drop in the arterial blood pressure, cyanosis out of proportion to the apparent

pulmonary involvement and unexpected death. Six of these 26 patients exhibited electrocardiographic abnormalities. Emphasis was placed on the necessity of examining multiple sections of the myocardium either to establish or to disprove a diagnosis of myocarditis.

Hormones in Treatment of Obesity.—This report by Kunde is based on the study of 50 patients with obesity. All had been referred for endocrine treatment either because of debilitating overweight, presumably due to some vague endocrinopathy, or because of some specific endocrine dysfunction with which the overweight was associated. The author stresses that no hormones or gland products are necessary adjuncts in the treatment of any type of obesity, excepting hypothyroidism. Thyroid hormones should be administered solely for the correction of a specific hypothyroidism. When this is properly accomplished, the obesity will take care of itself or it should be managed by dietary regulation. The use of thyroid extract in patients with adiposity but with no hypothyroidism, solely for the purpose of attempting to effect weight loss by stimulating metabolism, is fraught with disappointment and failure. Such overweight patients soon manifest the symptoms of severe induced hyperthyroidism with little or no weight loss. A high protein, low fat, low carbohydrate diet, supplemented with vitamins and minerals, and with no calculation of caloric values or administration of any known hormones, results in satisfactory weight reduction in all known types of obesity. Endocrine obesity is a term which is misleading in that it conveys to the obese patient a false idea, suggesting that his obesity is due to some specific endocrine glandular deficiency which can be corrected by substitution endocrine, or hormone therapy. This causes the patient to seek needless endocrine medication, whereas dietary measures and reeducation of faulty food habits are the true solutions to correction of obesity.

Arizona Medicine, Phoenix

5:1-120 (May) 1948

Management of Chronic Bronchopulmonary Suppuration. P. C. Samson. —p. 29.

Diagnosis and Treatment of Bowel Obstructions. P. Thorek.—p. 38.
Chronic Coccidioidal Meningitis: Case History. I. Frank.—p. 41.
*Effect of Protein Deficiency in Average Diets. H. V. Soper.—p. 46.
Early Ambulation and Decreased Incidence of Post-Operative Complications. H. A. Barnes.—p. 50.

Protein Deficiency in Average Diets.—Soper studied for ten years 308 persons ranging from 4 to 82 years. The persons were given a complete physical examination to rule out definite medical and surgical conditions and only those who presented no obvious disease were included in this series. They were living an average life and many believed they were eating adequately, but thought it quite "un-American" to eat meat for breakfast. The occupations were largely those of the so-called white collar class and housewives, but also included a few heavy physical workers. Typical symptoms included loss of appetite, a need for eight to twelve hours of sleep, a drowsiness from arising till coffee or a cold shower had been taken. They hurried to work. Many had a feeling of well-being until about 9:30 or 10 o'clock, when a let-down occurred and a snack was needed. Lunch was eaten usually in a hurry and the patient felt fairly well till about 2 o'clock, when again he felt let down, which progressed till quitting time. Many felt so exhausted that on arriving home they had to sit and rest and often napped till time to prepare or eat dinner. Some felt best after dinner and others were so tired they felt they had to go to bed so as to be able to go to work the next morning. The author insists on a large protein serving for breakfast. It was found that any kind of lean meat, fish or fowl such as steaks, ham, pork, pork chops, lamb chops, mutton, chicken, fish, rabbit, turkey, liver or ground meats, or roasts, or cold meats, if eaten in large amounts, would suffice. Bacon has only slight value. The author stresses that the use of large quantities of meat protein up to 3 to 4 Gm. per kilogram of body weight, especially for breakfast, can do far more for the general health and strength of these patients than prolonged therapy with vitamins, iron, liver, minerals and such

Connecticut State Medical Journal, Hartford

12:403-506 (May) 1948

Diagnosis of Brucellosis. W. W. Spink.—p. 406.
Fundus Changes in Blood Dyscrasias. E. M. Blake.—p. 410.
Practical Approach to Problem of Epidemic Ringworm of Scalp. S. M. Peck.—p. 413.
Painless Labor with Heavy Nupercaine. M. L. Berlowe and F. L. Herrick.—p. 417.
Puerperal Subperitoneal Hematoma: Case Report. F. W. Shull and H. Thoms.—p. 419.
Medicine and the Future. L. S. Goin.—p. 422.

12:507-606 (June) 1948

Future of Our Voluntary Hospitals. R. P. Sloan.—p. 509.
Use of Vaginal Smear in Diagnosis of Cancer. H. Ulfelder.—p. 513.
Coronary Artery Disease in Women Under Age of Thirty. (A report of 2 Cases). P. J. Steiner.—p. 515.
Penicillin in Treatment of Syphilis. F. W. Reynolds.—p. 518.
Psychoneuroses: Clinical Evaluation by Internist. B. V. White.—p. 522.
Infectious Mononucleosis: A Report on 24 Cases. N. E. Creaturo, I. B. Akerson and Margaret M. Flanagan.—p. 526.
Utilization of a University Cancer Clinic for Teaching Purposes. M. Taffel.—p. 532.
Government and Medicine. J. R. Miller.—p. 535.

Diseases of Chest, Chicago

14:317-474 (May-June) 1948

Treatment of Patent Ductus Arteriosus. W. S. Conklin.—p. 317.
Closure of Cavities in Pulmonary Tuberculosis Produced by Immobilization of Both Lungs. J. H. Cullen, R. K. Myers, A. L. Barach and G. T. Herben.—p. 345.
Pulmonary Heart Disease. W. A. Sodeman.—p. 360.
Role of Bronchoscopy in Clinical Medicine and Surgery. A. Q. Penta.—p. 366.
Demand Valve for Administration of Aerosols of Penicillin and Streptomycin. M. S. Segal, L. L. Levinson and J. F. Beakey.—p. 386.
Tumors of Anterior Mediastinum: Report of 6 Cases. M. S. Lloyd.—p. 396.
Combined Thoracoplasty. G. Maurer.—p. 415.
Cardiospasm with Associated Pulmonary Disease. T. G. Heaton.—p. 425.
Bronchial Adenoma. W. E. Howes.—p. 427.
Bronchiectasis in Children. A. Chattas.—p. 437.
Present Status of Streptomycin in Tuberculosis. K. H. Pfuette and W. M. Ashe.—p. 446.

Georgia Medical Association Journal, Atlanta

37:121-166 (April) 1948

Management of Injuries of Elbow Joint. C. Sandison.—p. 121.
Observations on Fitting of Artificial Limbs. B. W. Harris.—p. 127.
Use of Novocain and Oil in Treatment of Low Back Injuries. W. W. Turner.—p. 134.
Newer Concepts in Treatment of Cirrhosis of Liver. E. A. Allen.—p. 136.
Pigmented Lesions of Eye and Adnexae. F. P. Calhoun Jr.—p. 140.
Nature's Disturbances and Cures in Ophthalmology. E. S. Osborne.—p. 142.
How and Why of Visual Tests. H. R. Perkins.—p. 145.
The General Practitioner and His Opportunities. V. Johnson.—p. 149.

Indiana State Medical Assn. Journal, Indianapolis

41:487-572 (May) 1948

Vascular Changes of Eye Associated with Diabetes Mellitus. C. B. McFarland.—p. 487.
Styes: Role of Nutrition in Etiology and Treatment. W. M. Cockrum, H. D. Lynch, H. C. Slaughter and W. E. Austin.—p. 489.
Cross Cylinder in Refraction. M. Cuthbert.—p. 491.
Hemorrhages of Retina: Newer Treatment. C. W. Rutherford.—p. 494.
Headache. C. L. Mahoney.—p. 496.
Periorbital Cellulitis: Report of 4 Cases. W. R. Hickman.—p. 501.

41:591-676 (June) 1948

*Rocky Mountain Spotted Fever in Indiana: Recent Advances in Therapy. H. H. Muntz and I. Salkin.—p. 591.
Treatment of Diabetic Coma at Indianapolis General Hospital. F. B. Peck.—p. 595.
Fracture of Shaft of Femur. E. B. Mumford.—p. 599.
Brucellosis: Résumé of Present Concepts with Special Reference to Chronic Illness. H. J. Harris.—p. 603.

Rocky Mountain Spotted Fever.—According to Muntz and Salkin Rocky Mountain spotted fever has been reported in 47 of 48 states and accounts for approximately 140 deaths annually in the United States. The disease increases in severity as one moves westward. The average figures for mortality are 25 per cent for Eastern states, 50 per cent for the Western states and 75 per cent for the Far West. On the basis of a survey of the disease in Indiana, the authors stress that Rocky Mountain spotted fever is endemic in Indiana. One hundred and ten cases have been reported in the ten-year period between 1937 and 1947. The mortality rate at the Indiana University Medical Center before para-aminobenzoic acid therapy was

33 per cent (8 deaths in 24 cases). In 8 patients treated with para-aminobenzoic acid, 1 death occurred. The disease is most prevalent in June, July and August. Any acute disease which begins with fever, chills, severe headache, pain in the bones and muscles and a macular eruption which becomes petechial after recent contact with ticks should be strongly suspected of being Rocky Mountain spotted fever. The authors believe all patients with Rocky Mountain spotted fever should be treated with para-aminobenzoic acid. Routine symptomatic care and antibiotic drugs are valuable adjuncts to prevent secondary infection in the debilitated patient. The specific vaccine for Rocky Mountain spotted fever should be considered as a possible method of prophylaxis.

Journal of Bone and Joint Surgery, Boston

30B:229-404 (May) 1948

- Paraplegia in Cervical Spine Injuries. R. Barnes.—p. 234.
Paraplegia in Hyperextension Cervical Injuries with Normal Radiographic Appearances. A. R. Taylor and W. Blackwood.—p. 245.
Pressure at Cervico-Brachial Junction: Operative and Anatomical Study. E. D. Telford and S. Mottershead.—p. 249.
Fatigue Fractures of Fibula. H. J. Burrows.—p. 266.
Management of Acute Circulatory Failure in Injured Limb. D. L. Griffiths.—p. 280.
*Clinical Diagnosis of Fat Embolism. P. H. Newman.—p. 290.
Plastic Splints and Appliances in Orthopedic Surgery. W. Herschell and J. T. Scales.—p. 298.
*Traumatic Uraemia: Collective Review. E. M. Darmady.—p. 309.
Movements of Bones and Joints: 1. Fundamental Principles with Particular Reference to Rotation Movement. M. A. MacConaill.—p. 322.

Clinical Diagnosis of Fat Embolism.—According to Newman fat embolism occurs in a high percentage of all cases of injury. It is a relatively frequent complication of fractures of the long bones in civilian accidents as well as battle casualties. The diagnosis can usually be established by the clinical features together with certain physical signs which must, however, be sought deliberately. Important clinical features are mental changes such as failure to cooperate, restlessness, delirium, stupor, alternation of coma with full consciousness, petechial hemorrhages in the conjunctiva and skin, particularly in the supraclavicular regions, and typical changes in the retina. Evidence is still conflicting as to whether the fat arises by embolism from an injured bone or by general metabolic disturbance. The fat is harmful not so much by reason of mechanical obstruction of vessels as by erosion and rupture of the vessel wall due to the liberation of fatty acids. Preventive treatment includes protection from long journeys over rough roads and care to avoid unnecessary manipulation. It appears to be of some value but no satisfactory specific treatment is yet available for the established case. Ligation of the profunda vein as a means of arresting venous drainage from the area of the femur has been tried in 2 patients, one of whom recovered and the other died.

Traumatic Uremia.—Darmady believes that traumatic uremia is of particular significance to orthopedic surgeons so far as this complication is responsible for high mortality in severe injury, crushing injury, traumatic shock, gun shot wounds, incompatible blood transfusions and the misuse of tourniquets. The association between muscle injury and renal failure is reviewed. The syndrome of the "crush kidney," which at first was thought to be the result of deposition of myohemoglobin in the renal tubules, is almost certainly due to the association of many factors all of which lead to alteration of the renal circulation and renal ischemia. Ischemia of the kidney combined with deposition of pigment and hemolysis of blood causes a high mortality in animals. This may account for the serious prognosis in man where there is both shock and hemolysis. Disturbance of water balance, allergic phenomena and chemical nephrotoxic action are discussed as other possible etiologic factors. Necropsies revealed that probably the only characteristic change of the syndrome of traumatic uremia is in the kidney itself, which is increased in weight. The greatest changes occur in the loops of Henle. There is a wide variety of casts which tends to obscure the tubular degeneration. One of the most interesting features is the occurrence of venous thrombi in the boundary zone associated with rupture of the tubules into the veins. A plea is made for early clinical recognition of the syndrome with its characteristic features, such as vomiting,

oliguria, hypertension with rapid and pronounced rise of blood urea or nonprotein nitrogen. Important aspects of treatment such as correction of electrolyte balance, management of water metabolism, use of sodium sulfate, artificial kidney, peritoneal dialysis and renal decapsulation are discussed. The dangers of excessive intravenous infusion are emphasized.

Journal of Clin. Endocrinology, Springfield, Ill.

8:271-344 (April) 1948

- Interstitial Tissue of Human Hermaphrodite. E. Van Campenhout and E. Witschi.—p. 271.
Adrenal and Testicular Deficiency: Comparison Based on Similarities in Androgen Deficiency, Androgen and 17-Ketosteroid Excretion, and on Differences in Their Effects on Pituitary Activity. E. P. McCullagh, T. W. Schneider, W. Bowman and M. B. Smith.—p. 275.
Analogies Between Urinary 17-Ketosteroids and Urinary "Estroids," as Determined Microchemically. W. T. Salter, Frances D. Humm and M. Jane Oesterling.—p. 295.
Alkaline Phosphatase and Glycogen in Human Endometrium. J. P. Arzac and E. Blanchet.—p. 315.
Use of Globin Insulin in Addison's Disease Associated with Insulin-Sensitive Diabetes. W. L. Lowrie, W. E. Redfern and D. P. Foster.—p. 325.
Diabetes in a Dwarf: Case Report. H. Schreier and I. Lewenter.—p. 332.

Journal of Clinical Investigation, Boston

27:299-388 (May) 1948

- Effects of Hypoxia and Hypercapnia on Perception of Thermal Cutaneous Pain. J. Stokes III, W. P. Chapman, and L. H. Smith.—p. 299.
*Use of Concentrated Human Serum Albumin in Treatment of Cirrhosis of Liver. H. G. Kunkel, D. H. Labby, E. H. Ahrens Jr. and others.—p. 305.
Complement Content of Human Serums with Especial Reference to Malaria. Anna Dean Dulaney.—p. 320.
Lung Function Studies: I. Rate of Increase of Arterial Oxygen Saturation During Inhalation of 100 Per Cent O₂. W. S. Fowler and J. H. Comroe Jr.—p. 335.
Effect of Spinal Anesthesia on Renal Ischemia in Congestive Heart Failure. R. Mokotoff and G. Ross.—p. 335.
Changes in Serum Proteins in Patients with Experimentally Induced Infectious Hepatitis. W. P. Havens Jr. and T. L. Williams.—p. 340.
Changes in Cerebrospinal Fluid Pressure Under the Infusion of Normal Saline. F. F. Feldes and Julia G. Arrowood.—p. 346.
Blood and Extracellular Fluid Studies in Chronic Malnutrition in Infancy. F. Gollan.—p. 352.
Studies on Gangrene Following Cold Injury: IX. Effect of Rutin and Other Chemical Agents on Course of Experimental Frostbite in Rabbits. F. A. Fuhrman and J. M. Crismon.—p. 364.
Kidney Function in Adrenal Insufficiency. Christine Waterhouse and E. H. Keutmann.—p. 372.
Studies on Pain: Investigation of Some Quantitative Aspects of Dol Scale of Pain Intensity. J. D. Hardy, H. C. Wolf and Helen Goodell.—p. 380.

Concentrated Human Serum Albumin in Hepatic Cirrhosis.—Kunkel and his associates report the results of albumin therapy in 17 patients with severe hepatic disease. All but 2 of them had ascites at the time when albumin was first administered. In 9 of 15 patients with fluid retention who were treated, a rapid loss of edema and ascites occurred. Five others showed a delayed loss of ascites. In those patients whose diuretic response to albumin was immediate, a beneficial course of events was rapidly initiated; loss of protein into ascitic fluid ceased, dietary protein intake increased, and positive nitrogen balance resulted. Such treatment carried seriously ill patients through the early critical period of their disease until such time as dietary and liver extract therapy had an opportunity to take effect. The amount of albumin needed to produce a loss of ascites was extremely variable, ranging from 4 to 80 units. Patients with evidence of portal obstruction, a high antidiuretic titer in the urine or long-standing ascites proved unresponsive to therapy. Patients with particularly severe hepatic disease and low plasma albumin levels following infectious hepatitis responded most readily to therapy. Patients having alcoholic and nutritional cirrhosis with a short period of ascites also responded to relatively small doses of albumin. Permanently beneficial results were obtained in 6 of 7 patients with the nutritional type of cirrhosis. Two of these patients required a second short course of therapy. Patients with post-necrotic cirrhosis after infectious hepatitis and biliary cirrhosis showed only a temporary response, and 4 of these patients eventually died. Evidence was presented for certain specific effects of serum albumin on dietary intake and nitrogen balance which may be of greater importance in the results obtained than its osmotic properties.

Journal Industrial Hygiene & Toxicology, Baltimore
30:145-210 (May) 1948

- Fume Exposure in Manufacture of Alumina Abrasives from Bauxite. C. M. Jephcott, J. H. Johnston and G. R. Finlay.—p. 145.
*Effect of Use of Calcined Alumina in China Biscuit Placing on Health of Workmen: Field Study in Group of Pottery Workers in North Staffordshire. A. Meiklejohn and W. W. Jones.—p. 160.
X-Ray Diffraction Analysis of Crystalline Dusts. H. P. Klug, L. Alexander and Elizabeth Kummer.—p. 166.
Influence of Particle Size in Dust Exposure. T. Hatch and W. C. L. Hemmon.—p. 172.
Retention of Air-Borne Particulates in Human Lung. H. D. Landahl and R. G. Hermann.—p. 181.
Toxicology of 1,2-Dichloropropane (Propylene Dichloride): Effects of Repeated Exposures to Low Concentration of Vapor. L. A. Heppel, B. Highman and E. G. Peake.—p. 189.
Hair Loss in Neoprene Manufacture. W. L. Ritter and A. S. Carter.—p. 192.
Medical Aspects of Maximum Allowable Concentrations: Benzene. Harriet L. Hardy and H. B. Elkins.—p. 196.
Use of Adsorbents for Protection Against Ammonia. J. C. Goshorn.—p. 201.
Determination of Chlorinated Hydrocarbons in Air. J. P. Fahy.—p. 205.

Effect of Calcined Alumina on Health of the Workmen.—Meiklejohn and Jones point out that inhalations of small amounts of suitably prepared pure aluminum metal, for short periods each day, have been used to inhibit toxic effects of silica in the lung and thereby delay, if not altogether prevent, the production of silicotic fibrosis. It occurred to the authors that a practical field test of the efficacy of one form of alumina in the treatment and prevention of silicosis had been in progress, over a period of years, among certain workmen in the pottery industry employed in the "placing" of china ware for the biscuit firing. Until 1929 finely powdered calcined flint was the medium in general use for this process, but later there was a gradual change over to the use of calcined alumina (Al_2O_3). The authors review observations on 52 china biscuit placers who had previously been examined by the medical board. All had considerable previous exposure to flint, followed by daily exposure to alumina varying from two to sixteen years. All the workmen were convinced that alumina produced a dustier atmosphere than flint, but all were agreed that alumina did not irritate the nose and throat or induce the feeling of stuffiness on the chest so familiar to them with flint. The old fear of the "dust" had gone. Even so complaints of cough, expectoration and dyspnea were as frequent as before. When flint was the medium the china biscuit placer was pale, often haggard and listless, but now he appeared natural in complexion, robust and active. These workers were reexamined. It was found that although this group of workmen were daily exposed to finely powdered alumina in a greater intensity and over a considerably longer period than is possible by existing methods of aluminum prophylaxis and therapy, not only did new cases of silicosis occur but known cases advanced. The authors think that ten or twenty years must elapse before any authoritative opinions on the subject can be expressed, and that reports based on short term observations should be treated with circumspection.

Journal-Lancet, Minneapolis
68:169-216 (May) 1948

- Asthmatic Children. R. Bowen.—p. 169.
Common Endocrine Problems in Childhood. R. B. Tudor and H. H. Grosse.—p. 178.
Normal Electrocardiograph in Children. Evelyn S. Harris and P. F. Dwan.—p. 183.
Preliminary Report on Association of Growth Failure and Poliomyelitis. N. N. Litman and J. F. Bosma.—p. 185.
Peritonitis in Newborn of Intra-Uterine Origin. L. F. Richdort and L. H. Cady.—p. 188.
Subural Hematoma in Infants. W. R. Heilig, R. B. Tudor and E. S. Platou.—p. 192.
Well-Water Methemoglobinemia in Infants: Its Occurrence in Rural Manitoba and Ontario. H. Medovy.—p. 194.
Arteriosclerosis in Nine Year Old Child. J. L. Gedgoud and J. P. Tollman.—p. 197.
Use of Plastic Nipple Shields for Lactating Breast. C. H. McKenzie.—p. 199.
Value of Psychiatric Consultant to University Student Health Service. Harriot Hunter and Mary L. Gorton.—p. 201.
Comparative Studies in Tuberculosis and Histoplasmosis Among 2000 Students Entering Pennsylvania State College September 1947. E. S. Krug and H. R. Glenn.—p. 206.

J. Neuropathology & Exper. Neurology, Baltimore
7:123-234 (April) 1948

- Studies in Treatment of Experimental Hydrocephalus. F. D. Ingraham, D. D. Matson, E. Alexander Jr. and R. P. Woods.—p. 123.
Carcinomas of Tongue in Monkeys and Pathologic Changes in Central Nervous System. H. Kluver and A. Weil.—p. 144.
Golgi Apparatus in Autonomic Ganglion Cells and Peripheral Neuroglia and Its Modification Following Stimulation and Induced Hypertension. N. M. Sulkin and A. Kuntz.—p. 154.
Subcortical Changes in Cerebral Concussion. E. A. Spiegel, M. Spiegel-Adolf, and H. T. Wycis.—p. 162.
*Cerebrospinal Fluid: Its Origin, Nature and Function. G. B. Hassin.—p. 172.
Second Motor Cortex in Monkey (Macaca Mulatta). O. Sugar, J. G. Chusid and J. D. French.—p. 182.
*Kernicterus: Review with Report of Findings in Study of 7 Cases. P. F. L. Becker and P. Vogel.—p. 190.
Histometabolic Changes and Neuropathologic Selectivity in Light of Recent Investigations (Histometabolic Dysergia). L. Roizin.—p. 216.

Cerebrospinal Fluid.—The observations presented by Hassin on the complex problem of the origin, absorption and circulation of the cerebrospinal fluid are based chiefly on neuropathologic observations, experimental data being referred to only for comparison. He concludes that the cerebrospinal fluid represents the tissue fluids of the brain. The contents of the Virchow-Robin spaces which originate in the tissue fluids and which are discharged into the cerebral ventricles and the sub-arachnoid spaces are a part of the cerebrospinal fluid. The absorption of the cerebrospinal fluid is effected not through the villi or pacchionian bodies but through the perineurial spaces of the cranial nerves and spinal roots. The function of the choroid plexuses is not to secrete fluid but to excrete or eliminate from it noxious substances and to make it absorbable by the perineurial spaces. The cerebrospinal fluid is a lymph of the central nervous system, for it carries away its waste. There is no circulation of the cerebrospinal fluid under normal conditions. The collapsing and expanding movements of brain and spinal cord represent the forces that facilitate removal of the spinal fluid. The Virchow-Robin spaces represent the hemato-encephalic barrier.

Kernicterus.—Becker and Vogel describe 7 cases of kernicterus, all of which were associated with erythroblastosis fetalis. The condition was confirmed by serologic and histologic studies. In cases 1, 2, 3, 5 and 7 the infants were Rh positive and the mother Rh negative with anti-Rh agglutinins. In case 4, the erythroblastosis was presumably due to the A factor. In case 6, the erythroblastosis was due to the Rh" factor. In 5 cases jaundice appeared during the first day of life; postmortem studies disclosed the discoloration to be present most frequently in the hippocampus, basal ganglions, midbrain, medulla and floor of the fourth ventricle. In regions grossly bile stained the nerve cells were shrunken and stained readily with eosin, some containing dark-staining nuclei. Some nerve cells displayed poorly stained cytoplasm and vacuolization. Extramedullary erythropoiesis, chiefly in the liver and spleen, and visceral hemorrhages were other anatomic findings.

Michigan State Medical Society Journal, Lansing
47:457-576 (May) 1948

- Medicine and the Future. L. S. Goin.—p. 505.
Part of General Practitioner in Management of Vesical Neck Obstruction. F. E. B. Foley.—p. 509.
Unusual Forms of Rheumatic Pain. R. L. Cecil.—p. 516.
*Diagnosis and Treatment of Scabies. E. A. Hand.—p. 519.

Diagnosis and Treatment of Scabies.—Hand says that the normal decrease in scabies expected in the summer of 1946 did not occur. This was the result of the demobilization of infested army and navy personnel, pouring fresh scabies into the civilian population. The summer of 1947 saw the normal decrease, but the disease is again on the increase. Friedman noted that the acarus could easily be demonstrated by the scrape and smear method, and also that the diagnosis could be made by finding acarus eggs filled with embryo or empty, skeletal parts of the acarus, the larvae, and the scybala as well as from the adult acarus. Scabies should be suspected in all cases of furunculosis, as this often masks the underlying scabies. This is also true of ecthyma, pyoderma and impetigo in children. The following

areas should always be examined: the webs of the fingers, the anterior portion of the wrist, the inner and posterior part of the elbows, the anterior axillary folds, the nipples and breasts in women, the navel and abdomen, the shaft and glans penis in the circumcised, the penis shaft to the external rim of the foreskin in the uncircumcised, the scrotum, the buttocks, and the knees, ankles and toes. Though scabies is more common in the poor and unclean, it is found in all classes and in all periods of life. Next to avoidance of those infested, frequent bathing is the best prophylaxis. Sulfur has been used in many forms, but benzyl benzoate is the treatment of choice for scabies.

Minnesota Medicine, St. Paul—

31:451-608 (May) 1948

- The Drug Addict. E. M. Hammes.—p. 481.
Common Methods of Inguinal Hernia Repair: Comparison of Recurrence Rates. D. Sanderson and C. O. Rice.—p. 485.
Hemostasis in Tonsillectomy. G. M. A. Fortier.—p. 493.
Certain Factors Influencing Survival and Death in Coronary Artery Disease. F. A. Willius.—p. 497.
*Cold Prevention Study: Influenza Vaccine for Prevention of Common Cold. D. W. Cowan and H. S. Diehl.—p. 504.

Prevention of Cold.—The study reported by Cowan and Diehl was conducted at the request of the Commission on Influenza of the Office of the Surgeon General, U. S. Army. The experimental subjects were students of the University of Minnesota. A controlled study indicates that influenza vaccine A and B is of no value for the prevention of the common cold. The subjects who received influenza vaccine reported more reactions than the control group.

Nebraska State Medical Journal, Lincoln

32:153-188 (May) 1948

- Role of General Practitioner in State and National Health. A. C. Sudan.—p. 155.
Some Deleterious Results of Rest in Bed After Orthopedic Operations. R. K. Ghormley.—p. 160.
Chronic Residuals of Brain Injury. J. A. Aita.—p. 163.
Unusual Complication Encountered in Removal of Large Retroperitoneal Ganglioneuroma. J. W. Gatewood, L. D. McGuire, A. C. Johnson and H. M. McCarthy.—p. 170.
Lasting Results Following Internal Urethrotomy for Urethral Stricture. E. Davis and L. W. Lee.—p. 173.
Cryotherapy (Dry Ice) in Treatment of Skin Diseases. W. E. Kelley.—p. 175.
Principles of Early Management of Hand Injuries. J. E. M. Thomson.—p. 177.

33:189-224 (June) 1948

- Surgical Lesions of Pancreas. W. H. Cole.—p. 195.
Digitalis Derivatives. M. C. Andersen.—p. 203.
Symposium on Low Back Pain. Medical Considerations. R. A. Moser.—p. 205.
Neurologic Aspects of Low Back Pain. G. A. Young.—p. 206.
Gynecologic Aspects of Low Back Pain. J. J. Freymann.—p. 208.
Low Back Pain—Orthopedic Aspects. W. R. Hamsa.—p. 210.

New England Journal of Medicine, Boston

238:723-754 (May 20) 1948

- *Portacaval Shunts in Treatment of Portal Hypertension with Special Reference to Patients Previously Operated Upon. R. R. Linton.—p. 723.
Salmonella Osteomyelitis of Spine Associated with Abdominal Aortic Aneurysm. K. R. Dehlinger.—p. 728.
*Bone and Joint Pain in Leukemia, Simulating Acute Rheumatic Fever and Subacute Bacterial Endocarditis. M. Aisner and T. B. Hoxie.—p. 733.
Orthopedic Surgery: II. Growth and Inequality of Leg Length in Poliomyelitis. J. S. Barr.—p. 737.
Empyema of Right Pleural Cavity.—p. 743.
Acute Glomerulonephritis. Acute Pulmonary Edema.—p. 746.

Portacaval Shunts in Portal Hypertension.—Linton presents 4 cases in 3 of which the results obtained in the treatment of portal hypertension, secondary to an extrahepatic portal bed block (Banti's syndrome), by the formation of portacaval shunts were encouraging, since none of the patients with satisfactory shunts has bled since they were performed. The most satisfactory portacaval shunt seems to be an end-to-side suture type of splenorenal anastomosis performed at the same operation at which the spleen is removed. In some patients who have had previous splenectomies it may be possible to perform other types of portacaval shunts, such as a superior mesenteric vein to inferior vena cava or inferior mesenteric vein to left ovarian

vein. Two patients have gone twenty-two and fourteen months since the shunts were formed without evidence of esophago-gastrointestinal hemorrhages. A direct portacaval anastomosis was not possible in 3 of these cases because of a cavernomatous transformation of the portal veins. It is believed that a surgeon should not do a splenectomy in a case of portal hypertension unless he is prepared to do a splenorenal anastomosis at the same operation, since this may be the only opportunity to construct a satisfactory shunt. A longer period of observation is necessary to determine whether the portal hypertension and the tendency to esophagogastrointestinal hemorrhages have been permanently influenced.

Pain in Leukemia Simulating Rheumatic Fever or Endocarditis.—Aisner and Hoxie report 4 cases of acute lymphatic leukemia, 3 of which presented signs and symptoms simulating those of acute rheumatic fever and 1 simulating those of subacute bacterial endocarditis. The authors discuss certain pitfalls and aids in the differential diagnosis between acute rheumatic fever and acute lymphatic leukemia. Complete examination of the blood should be performed routinely in all cases presenting bone or joint pains. The findings that point to the diagnosis of lymphatic leukemia rather than of acute rheumatic fever are leukopenia persistent in the presence of an active clinical course, leukopenia or leukocytosis associated with an increase in the percentage of lymphocytes and bone changes on roentgen examination. The authors enumerate the various bone changes in leukemia that are visible by roentgen study and stress the differential diagnostic importance of other disorders that cause bone and joint pain in young persons.

New Orleans Medical and Surgical Journal

100:491-538 (May) 1948

- Poliomyelitis. H. J. Aymond.—p. 491.
Meningitis: Recent Advances in Therapy. C. J. Tripoli and W. G. Unglaub.—p. 492.
Peritoneoscopy: Analysis of Its Use in 69 Cases. W. J. Hollis and W. H. Brown.—p. 498.
Acute Mastoiditis: Secondary to Fracture of Mastoid. C. Vedrenne and J. R. Hays.—p. 504.
Dicumaryl: Use of Dicumaryl in Prevention and Treatment of Intravascular Clotting and Embolism. S. A. Romano.—p. 506.
Rh Factor in Clinical Obstetrics and Gynecology. J. W. Davenport.—p. 510.
Hematuria: Its Clinical Significance. C. O. Frederick.—p. 517.
Management of Prostatism. U. S. Hargrove.—p. 521.

New York State Journal of Medicine, New York

48:961-1088 (May 1) 1948. Partial Index

- Radiation Dosage. W. T. Murphy.—p. 1007.
Doctors Beck of Schenectady and Albany. E. Kellert.—p. 1015.
History of Surgery in Rochester, New York. R. A. Leonardo.—p. 1020.
Treatment of Hyperthyroidism with Propyl Thiouracil. S. Rinkoff and M. Spring.—p. 1025.
Optimal Physical Therapy for Rheumatoid Arthritis. E. Stengel.—p. 1028.
Prescription of Occupational Therapy. S. Licht.—p. 1032.
Physical Treatment of "Frozen Shoulder." H. J. Behrend.—p. 1035.

48:1089-1200 (May 15) 1948

- Recent Advances in Communicable Disease Control. H. S. Ingraham.—p. 1135.
Chest Injuries. W. Woodruff.—p. 1142.
Diagnostic Sign for Anterior Tibial Vein Thrombosis: Preliminary Report. R. Rosenthal.—p. 1148.
Coronary Artery Disease in Older Patients. G. F. Greco.—p. 1153.
Mycotic Infection in Gangrene of Lower Extremities. S. S. Samuel.—p. 1157.
Penicillin Administration Via The Vagina. R. I. Walter, M. A. Goldberger and Louis S. Lapid.—p. 1159.

Ohio State Medical Journal, Columbus

44:561-664 (June) 1948. Partial Index

- Digitalis Intoxication. D. H. Greigor.—p. 593.
Laboratory Diagnosis of Virus Infections. R. F. Parker.—p. 596.
Question of Protein Derangement in Diabetic Retinopathy. G. T. Schwarz.—p. 600.
Reconstruction of Distal Portion of Thumb. E. C. Weckesser.—p. 602.
Nephroposis. V. C. Laughlin.—p. 604.
Clinical Interpretation of X-Ray Pelvimetry. H. P. Taylor.—p. 608.
Office Gynecology. J. K. Hoerner.—p. 612.
Reduction of Morbidity and Mortality in Lung Abscess by Early Surgical Intervention. A. J. Carlson.—p. 617.
Syndrome of Guillain-Barre: Case Report. J. C. Smith.—p. 621.

Oklahoma State Medical Assn. Jour., Oklahoma City

41:175-220 (May) 1948

- Carcinoma of Body of Uterus. R. A. McGill.—p. 177.
Small Bowel Obstruction. E. E. Talley.—p. 181.
Surgery of Cervix with Electric Knife. J. E. Wallace.—p. 186.
Chest X-Ray Survey Program in Oklahoma. R. M. Burke.—p. 192.

Review of Gastroenterology, New York

15:439-528 (June) 1948

- Infection of Anal Glands. E. T. Whitney.—p. 451.
Postdysenteric Diarrhea Due to Milk Allergy. E. M. Rappaport.—p. 466.
Gastrectomy for Peptic Ulcers. (Based on 350 Gastrectomies.) M. E. Steinberg.—p. 484.
Diseases of Pancreas. (Case Report.) P. D. Badia.—p. 502.
Studies on Dissolved Mucin (Mucoprotein) of Gastric Juice: II. New Quantitative Colorimetric Method for Determination of Total Dissolved Gastric Mucin. G. B. J. Glass and L. J. Boyd.—p. 511.
Oil Soluble Anesthetics in Proctology: Some Old and New Techniques. W. Lieberman.—p. 520.

South Dakota Journal of Medicine, Sioux Falls

1:139-178 (April) 1948

- Management of Acute Dermatitis. Helen J. Hare.—p. 139.
Renal Tumor. W. A. Dawley.—p. 144.
Distribution of Phosphatase in Human and Mouse Tumors. W. L. Hard, H. R. P. Thomas and M. Belkins.—p. 154.
Use of Intravenous Pentothal in Second Stage of Labor. Mary Price.—p. 159.

United States Naval Med. Bulletin, Washington, D. C.

Supplm. to (March-April) 1948. Partial Index

- Fundamentals of Isotope Separation. K. Cohen.—p. 6.
Application of Radioisotopes to Problems of Naval Medicine. R. E. Smith.—p. 17.
Thermal Diffusion and Other Physical Methods of Isotope Separation. W. W. Watson.—p. 28.
Pile Production of Radioactive Isotopes. W. E. Cohn.—p. 42.
Production of Radioactive Isotopes by Cyclotron and Other Methods. J. W. Irvine Jr.—p. 52.
New Mass Spectrometer for Isotope Ratio Measurements. H. W. Washburn.—p. 60.
Synopsis of Basic Ideas in Theory of Radioactivity and Detection of Radiation. R. D. Present.—p. 94.
Dosage Levels in Administration of Isotopes to Animals and Man. H. Lisco.—p. 161.

Virginia Medical Monthly, Richmond

75:263-324 (June) 1948

- *Results of Vagotomy. S. D. Blackford and A. McCausland.—p. 265.
Diverticulitis of Colon. C. Williams and C. Williams Jr.—p. 269.
*Rhinosporidiosis of Conjunctiva—Case Report. M. Edmunds and Regenia Beck.—p. 278.
Treatment of Peptic Ulcer. G. W. Horsley.—p. 281.
Another Fatality Following Use of Tridione and Hydantoin. R. F. Gayle Jr., J. P. Lynch and J. H. Scherer.—p. 288.
Serologic Tests for Syphilis and Their Clinical Application. W. J. Frohbose.—p. 292.
Digitalis in Acute Glomerulonephritis. H. C. Meredith Jr. and J. R. Beckwith.—p. 295.
Sinusitis. F. V. Gammage.—p. 301.

Results of Vagotomy.—Blackford and McCausland report on 22 vagotomies, 12 of which were performed by the trans-abdominal route in combination with other procedures and 10 of which were done by the transthoracic route without other surgery. In one instance a transthoracic vagotomy was followed two months later by a subtotal gastrectomy with further resection of the vagus nerves. In the 12 patients subjected to trans-abdominal vagotomy the ulcers were either duodenal or marginal. Vagotomy was combined with subtotal gastrectomy six times, with posterior gastroenterostomy five times, and in 1 case the stomach was opened and the pylorus manually dilated. A three to eleven months follow-up period revealed that results were excellent in 10, good in 1 and poor in 1. There is still insufficient evidence that vagotomy will prevent formation of a subsequent marginal ulcer. Improvement may be the result of the supplementary gastric surgery rather than of vagotomy. Trans-abdominal vagotomy combined with other gastric surgery must be considered at this stage of clinical experimentation. Transthoracic vagotomy gave equivocal results in the 10 cases reported. In only 6 of the patients have the results been entirely satisfactory. Three patients came to a subsequent subtotal gastrectomy. As yet no criteria have been found by which one can judge which patient having ulcer with pain will be relieved

permanently by a simple vagotomy. Until one can predict this and until one knows late results in a large series of cases the authors intend to employ a simple vagotomy with considerable caution.

Rhinosporidiosis of Conjunctiva.—Edmunds and Beck report a case of rhinosporidiosis of the conjunctiva in a white boy aged 12 years. The external appearances of both eyes were normal. When the lower lid of the left eye was everted there was a reddish partially sessile growth originating from the conjunctiva of the lower lid in its outer third. The growth was painless and measured about 6 mm. by 6 mm. by 8 mm. Complete excision and removal of the growth followed by cauterization of the base would seem the best treatment so far available. Microscopic examination of the growth showed a papilloma with little papillary branching or crypts. The striking observation was the presence of numerous round, thick-rimmed, double contoured, sharply defined cystic bodies of various sizes in the stroma of the growth. There was a moderate round cell infiltration around some of the medium-sized cystic bodies and the stroma of the polyp was moderately vascular. These cystic bodies are the trophic stages and immature and mature sporangia of *Rhinosporidium secheri*. The spores can be seen being liberated from the sporangium, anywhere in the interstices of the stroma of the polyp, occasionally in the macrophages and in the epithelium. Rhinosporidiosis is a local fungous infection of the mucous membranes with predilection for those of the nose and conjunctiva, caused by *Rhinosporidium secheri*. The mode of infection is not known. While this disease appears rather rare, perhaps more cases would be found and diagnosed if more polypoid growths of the nasal mucous membrane, conjunctiva and pharynx were submitted to the laboratory for microscopic study.

Yale Journal of Biology and Medicine, New Haven

20:433-518 (May) 1948

- Sir Charles Bell and Mysteries of Brain. E. Podolsky.—p. 433.
Aneurysms of Abdominal Aorta. E. Ford.—p. 441.
*Pregnancy and Thyroid Gland. J. P. Peters, Evelyn B. Man and M. Heinemann.—p. 449.
Immunocytochemistry of Mouse Tissue Components: III. Comparison of Antigenic Composition of Embryonic Mouse Organs with That of Adult Mouse Organs and With Mouse Tumors. Esther Sylvia Maculla.—p. 465.
Incidence of Primary Atypical Pneumonia of Unknown Etiology. J. R. Gallagher.—p. 473.
Mechanism of Topical Effect of Penicillin G in Experimental Local Streptococcal Infections. E. Grunberg, R. J. Schnitzer and C. Unger.—p. 479.
Concentration Partial Purification, Properties, and Nature of Staphylocoagulase. M. Tager.—p. 487.

Pregnancy and the Thyroid.—Peters and his associates point out that while it is generally agreed that the thyroid gland undergoes hyperplasia during pregnancy, there is no certainty that this hyperplasia is attended by hyperfunction. The rise of basal metabolism in pregnancy is not accompanied by other recognized manifestations of hyperthyroidism. Serum cholesterol is said to increase, a phenomenon that is regularly observed in hypothyroidism. Clinical hyperthyroidism may begin during pregnancy, but this does not seem to be a frequent occurrence. The authors are concerned chiefly with the concentrations of precipitable iodine in the serums of pregnant women. They found that precipitable iodine of the serum rises sharply at the onset of pregnancy from the normal concentration of 4 to 8 micrograms per hundred cubic centimeters to concentrations between 6 and 10 micrograms, and remains at these levels until delivery, after which it rapidly returns to the normal range. This rise is not accompanied by other manifestations of increased activity of the thyroid gland. There is reason to identify the increment of iodine with the thyroid hormone. There is evidence to suggest that failure of the precipitable iodine to rise at the onset of pregnancy leads to early miscarriage which may be prevented by the administration of active thyroid substance. Low precipitable iodine in these cases is not accompanied by other manifestations of thyroid deficiency. The serum-precipitable iodine in pregnancy does not appear to be consistently related to the concentration of iodine preceding pregnancy. No evidence has been found that serum-precipitable iodine is abnormal in women with infertility or toxemias of pregnancy.

Synopsis of Pediatrics. By John Zahorsky, A.B., M.D., F.A.C.P., Professor of Pediatrics and Director of the Department of Pediatrics, St. Louis University School of Medicine, St. Louis. Assisted by T. S. Zahorsky, B.S., M.D., Senior Instructor in Pediatrics, St. Louis University School of Medicine. Fifth edition. Fabrikoid. Price, \$5.50. Pp. 449, with 167 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1948.

In the fifth edition of this well known volume of pediatrics, some minor alterations have been made in keeping with recent advances. Some of the newer drugs are only mentioned; i. e., diphenhydramine ("benadryl"). There are 158 text illustrations, of which many are from the original edition. Some of these are obsolete, as for example the illustration of the technic for intramuscular injection of blood into the buttocks in hemorrhagic disease and icterus gravis. This present edition will continue to be a most practical and useful manual for the busy general practitioner.

Psychotherapy: Its Uses and Limitations. By D. Rhodes Allison, M.D., M.R.C.P., and R. G. Gordan, M.D., D.Sc., F.R.C.P. Oxford Medical Publications. Cloth. Price, \$3. Pp. 160, with 1 illustration. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E.C.4, 1948.

The aim of this book is well stated in the preface. The authors have, they say, "tried to point out how without special knowledge the physician and the family doctor may often help the patient to conquer his disease by maintaining his courage and morale, and have urged the necessity, if medicine is to progress, that an end should be made to suspicions and rivalries and that all branches of medicine should combine to fight disease in a team which can deal with both psyche and soma with individual and environment, all of which indeed are indivisible." Some of the chapter headings are: psychosomatic conditions, the relation of rheumatism to mental illness, psychotherapy in the treatment of psychoses, the patient's reaction to bodily disease, and the combined approach.

The authors recognize the value of psychotherapy in certain well selected cases, pointing out that it is no panacea, that no one method is applicable to all cases, and that the personality as well as the training of the therapist is important. They point out, too, the fallacy of blaming on the patient's "uncooperativeness" any failure of therapy; instead, they say, "it is the business of the doctor to determine, if he possibly can, why the patient cannot or will not cooperate, and in the case of the psychoneurotic, to resolve the difficulty or to hand the patient over to some one who can do so [p. 148]." The authors write well, with eminent British common sense and broadness of view. The book can be recommended to every physician interested in the field of treatment.

Chaucer's World. Compiled by Edith Rickert. Edited by Clair C. Olson and Martin M. Crow. Cloth. Price, \$6.75. Pp. 456, with illustrations selected by Margaret Rickert. Columbia University Press, 2960 Broadway, New York 27, 1948.

This scholarly volume began with the research of the late Professor John M. Manly and Edith Rickert on Chaucer and Chaucer's times. The book includes a collection of documents, quotations, diaries, notebooks and all sorts of other memorandums which afford a fascinating reflection on the times concerned. A section dealing with the ethics of the physician has already been quoted in the Tonics and Sedatives column of *THE JOURNAL*. There are several other medical items of similar interest. Most of the quotations in medicine come from the famous John Arderne, who was born in 1307 and whose work seems to have been personally known to Chaucer. There is record of a case of malpractice for wrongly setting an arm with a claim for damages of 200 pounds. The record of the Court of Common Pleas of the London of that period seems to have involved the doctors rather frequently.

Barbed-Wire Surgeon. By Alfred A. Weinstein, M.D. Cloth. Price, \$3. Pp. 310. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

In 1940 Dr. Alfred A. Weinstein joined the United States Army. Thereafter he was nearly three and one-half years in prison, sometimes in hospitals, under the none too gentle care of the Japanese. Reports indicate that some 18,000 were under these tender ministrations but about 4,000 survived to return home. The record by Dr. Weinstein is an account of the situations in which he took an actual part. It is full of incidents and anecdotes with a medical flavor and it will serve to remind

both those who fought and those who remained at home that the brutalities of the Far East were quite as vicious as those of middle Europe and had their own peculiar flavor as well. As the author says in his prologue, this is the story of GI Joe in prison, a story of hunger and disease, in which the personal problems of the author serve to carry the thread of the story from beginning to end.

Life is for Living. By D. Ewen Cameron, M.D., Professor of Psychiatry, McGill University, Quebec. Cloth. Price, \$2.75. Pp. 241. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

The trend toward writing interpretive books for lay people continues. However, the quality of many of these works is so poor that the lay reader becomes more confused than settled in his thinking. Dr. Cameron apparently is the newest aspirant to attempt to climb the bandwagon of popular psychiatric works. His title is intriguing, but his material is disappointing. He states that he has written a book for those of us who are trying to grope our way through the confusions and contradictory absurdities, the moral dangers and the psychologic pestilences of midcentury living. The organization of the book is in itself confusing, because there seems to be no planned continuity in the development of his concepts. At certain points the text is even incoherent. He raises many questions and then goes off into rambling, philosophical answers which could not satisfy even the most learned seeker for stability. The author uses the text to present some of his favorite concepts without documentation. The book does not have either index or bibliography. The author closes with a trite statement that "what we must do is to see our world. . . in which we must at last take final responsibility for ourselves, in which all man's works will be his works."

Symposium on Medicolegal Problems Under the Co-Sponsorship of the Institute of Medicine of Chicago and the Chicago Bar Association. Edited by Samuel A. Levinson, M.D., Ph.D., for the Committees of the Institute of Medicine and the Chicago Bar Association. Fabrikoid. Price, \$3. Pp. 255. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1948.

The Institute of Medicine of Chicago and the Chicago Bar Association collaborated in 1945 in arranging a symposium on medicolegal problems. Six subjects were selected for discussion, and the medical and legal aspects of each subject were presented respectively by a physician and by an attorney, followed by a question and answer period. The subjects chosen were The Medical Witness in Court, Artificial Insemination, The Practice of Pathology and Its Medicolegal Problems, Operations to Produce Sterility, Trauma and Tumors in Industrial Medicine, and Scientific Tests in Evidence, such as blood grouping tests in disputed paternity cases and chemical tests for intoxication. This small volume contains the twelve papers that were presented and the discussion that followed the presentations. These papers are most informative, and the symposium concretely reflects the value of meetings between groups of physicians and lawyers for discussions of oftentimes perplexing problems of mutual interest. Physicians, lawyers and others interested in this particular field will find in these papers much of value and answers to many questions that cannot be found conveniently elsewhere.

An Introduction to Clinical Psychology. Edited by L. A. Pennington, Ph.D., Associate Professor of Psychology, University of Illinois, Urbana, Illinois, and Irwin A. Berg, Ph.D., Associate Professor of Psychology, Pomona College, Claremont, California. With a foreword by George D. Stoddard, Ph.D., President of the University of Illinois, Urbana. Cloth. Price, \$5. Pp. 395, with 42 illustrations. The Ronald Press Co., 14 E. 26th St., New York 10, 1948.

The authors point out that the variations in what clinical psychologists individually do accounts for marked differences in content of courses labeled "clinical psychology." There are many state certification laws which require academic credit for a course in clinical psychology. Yet students who meet this requirement frequently secure widely differing training in different institutions. Such courses may actually be those of advanced abnormal psychology, psychologic and clinical testing or a minor course in counselling and psychotherapeutic technics. Still a fourth course may be concerned solely with personality development. The aim of this book is in a sense to alleviate these difficulties and present a first course in clinical psychology, including a definition, meanings of concepts, a discussion of

behavior problems, presentation of the tools with which the psychologist works, a description of minor therapeutic procedures by which behavior disorders can be alleviated and a discussion of professional relationships between psychologists and members of the psychiatric profession and their mutually overlapping fields.

Certain sections of the discussion revolve about the problem of where the field of the psychologist ends and that of the psychiatrist begins. The authors appear to hold to the view of nonlimitation of the field of the psychologist, which is directly in contradistinction to the attitude of most psychiatrists and psychoanalysts. Most psychiatrists feel that the function of the clinical psychologist in therapy of mental disease is to render assistance to the psychiatrist, rather than to assume his whole function. The volume is otherwise excellently conceived and provides a comprehensive coverage of clinical psychology, especially for the student. Fifty-six useful illustrations and reference tables are included.

A Textbook of Clinical Pathology. Edited by Francis P. Parker, M.D., Associate Professor of Pathology, University of Virginia School of Medicine, Charlottesville, Virginia. [Formerly edited by Roy R. Kracke and Francis P. Parker.] Third edition. Fabrikoid. Price, \$9. Pp. 1023, with 228 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1948.

This new edition represents a revision of the previous one by Kracke and Parker. The contents are made up of contributions by eight authors, all authorities in their branches of clinical pathology. As in previous editions, the interpretation of laboratory findings is the most distinctive feature and is of special value to practitioners.

The chapter on blood includes technic and findings of bone marrow studies. In the discussion of hemorrhagic diseases the procedures helpful in diagnosis and treatment are well described. Blood groupings and Rh factors are particularly well discussed and brought up to date. The section on clinical chemistry emphasizes the common determinations, including phosphatases, total proteins, sodium and potassium. Short chapters on an assay of hormones and vitamins have been included. Tests for hepatic function, including the valuable cephalin-flocculation and alkaline phosphatase tests, are assembled separately. Sputum examinations are well illustrated and include examinations for fungi and the fluorescent demonstration of acid-fast organisms.

In a brief chapter, the tests for renal function are presented in clear, simple form. Illustrations of slide and tube agglutinations, cutaneous reactions in allergy and brucellosis add to the clear, comprehensive presentation of immunologic tests in disease.

With reference to the serologic diagnosis of syphilis, the additional procedures like the Mazzini slide test and Boerner-Lukens complement fixation test are described. Biologic false-positive reactions and their interpretation are discussed.

In the appendix is a valuable description of the common bacteriologic technical methods employed in a hospital laboratory. Each chapter is supplemented, in most instances, by an adequate bibliography.

The book is recommended to students and practitioners as well as laboratory personnel for its interpretive as well as informative contents.

Neuroanatomy. By Fred A. Mettler, A.M., M.D., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. Second edition. Cloth. Price, \$10. Pp. 536, with 357 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1948.

This is the second edition of a work which first appeared in 1942, a fact which is ample evidence that the book has met with approval. The book is divided into two sections. The first half deals with the gross anatomy of the nervous system, exclusive of the peripheral nerves. The sympathetic system is briefly discussed. The second half is concerned with the microscopic organization of the nervous system and a limited correlation of structure with function. The facts of neuroanatomy are, for the most part, presented accurately. They are not always readily available and their relationships and significance are often not made apparent to the beginning student, for whom the book is written. The index contributes to the difficulties in locating the desired information. Many titles have a large

number of pages cited without any qualifying references; the vagus nerve has 59, the medial lemniscus 54 and other titles almost as many. With these the reader can waste much time before locating the principal discussions. Furthermore, the discussions of many subjects have been divided between a number of different places. Much of the discussion of the detailed structure of the central nervous system, notably the brain stem, is by description of successive serial sections. These are detailed and accurate. However, the attempted correlation of this information is so incomplete that the student must have difficulty in appreciating the organization of any extensive system. In not a few places the discussions are unduly complicated and at the same time deficient. The description of the gross anatomy of the trigeminal nerve on page 81, of the inter-trigeminal foramina of Monro on page 104 and of the efferent and afferent connections of the cerebellum on pages 326 to 327 are cases in point. The extensive, careless use of inaccurate contractions of terminology, characteristic of the dissecting room and laboratory, detracts from the book. Examples of this are the repeated use of "dura" for "dura mater," of "callosum" for "corpus callosum" and of "medulla" or "oblongata" for "medulla oblongata." There are a few obvious errors, such as the following: the trigeminal (or gasserian) ganglion does not lie in the floor of the cavernous sinus (page 81). The posterior commissure does not end in the pineal body (page 100). The rubrospinal tract in man is not comparable to that in lower animals as the student would probably conclude from page 345. The origin of specific extrapyramidal corticofugal pathways is not discrete and sharply localized as is indicated in figure 263A. This work is profusely illustrated. There are a number of clear, illustrative photomicrographs, and 46 pages of well chosen references to the literature.

American Universities and Colleges. Edited by A. J. Brumbaugh, Vice President, American Council on Education, Washington, D. C., and Mary Irwin. Fifth edition. Cloth. Price, \$8. Pp. 1054. American Council on Education, 744 Jackson Place, Washington 6, D. C., 1948.

Among the most valuable of the reference books available in the field of education is this standard guide first inaugurated in 1928 and thereafter published at four year intervals. The book is up to date and includes complete facts regarding 820 educational institutions with all of the information that the average student or any one else in the educational field would wish to have. The appendixes provide full information concerning the American Council on Education and other educational associations, information concerning academic costumes and accepted abbreviations for degrees. There is also an extensive general index, institutional index and a series of classifications by geographic and other divisions.

Directory of Physicians Interested in Clinical Allergy. Compiled by Jonathan Forman, B.A., M.D., F.A.C.A. Fabrikoid. Pp. 176. The Compiler, International Correspondence Society of Allergists, 956 Bryden Road, Columbus 5, Ohio, 1948.

This book contains a list of physicians who devote all or a part of their time to the treatment of allergic patients. The names are listed by states, cities and countries. The compilers admit that there may be omissions and welcome additions, corrections and suggestions for the next edition. Brief data concerning membership in professional societies accompany many of the names. The two indexes in the back comprise an alphabetical list of allergists in the United States and an alphabetical list of allergists in other countries. The several full page advertisements might well have been placed at the front or back of the book.

Taking the Cure: The Patient's Approach to Tuberculosis. By Robert G. Lovell, M.D. Cloth. Price, \$2. Pp. 93, with 6 illustrations by Donald Gooch. The Macmillan Company, 60 Fifth Ave., New York 11, 1948.

This booklet is packed full of sound advice for the tuberculous patient from one who has been through the mill. It has a special appeal in its brevity, its coverage of pertinent information and advice and its all-around excellence of quality. It is easily readable and may serve both the well read and those of more limited cultural attainments. The message is punctuated by a few well placed and impressive caricatures. There is also a useful bibliography for tuberculous patients which in reality will serve every type of human mentality.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

VITAMIN C IN ACUTE RHINITIS

To the Editor:—Massive doses (1,000 mg. the first day; 700 mg. the second) of ascorbic acid have been recommended in the early stages of acute coryza, and the claim has been made that an acute cold may be aborted by this form of therapy. Is there evidence either for or against this form of therapy? Do harmful effects occur from therapy with ascorbic acid in the mentioned dosage?

M.D., New York.

ANSWER.—A few years ago several articles appeared which advocated use of large doses of ascorbic acid in the early stages of acute rhinitis. Subsequently little evidence has appeared to support the contention that this therapy has any appreciable effect in aborting or cutting short the attack. Personal experience also fails to support the claim. Harmful effects have not been reported or experienced by the writer. More recently the use of tripeleminamine hydrochloride or other antihistaminic drugs has been recommended in the early stages of acute rhinitis on the assumption that vasodilatation responsible for the free flow of nasal secretion could be controlled by these drugs. Beneficial effects are reported by a few persons, but controlled statistics are not as yet available.

CATALEPTIC RIGIDITY

To the Editor:—A school of hypnology (so-called) issues a prospectus wherein there is a picture of a 235 pound (106.6 Kg.) man standing on a 113 pound (51.3 Kg.) woman in a cataleptic state supported by her heels and her head. Must I believe this? Would she support a ton? For how long? We know that a certain degree of tense rigidity can be secured in a cataleptic state but surely the cataleptic patient cannot become as rigid and strong as a plank of hard wood.

Max Isenberg, M.D., New York.

ANSWER.—Under deep hypnosis a subject can be given the suggestion that he will become rigid and the subject's body will retain the position in which it has been placed for a considerable time, even when the attitude is one which is difficult to maintain. It is quite possible that a woman of 113 pounds could support, in a cataleptic state, a man of 235 pounds for a few seconds. Under continued tension the muscles of course may eventually give way. This would depend on the musculature of the individual. Although a subject may remain rigid indefinitely this rigidity would not be maintained under a great weight. Such a person would not be able to support a ton, and no person would likely be able to maintain twice his or her weight more than a few seconds. The potential strength of the subject's muscles and bones would be the determining factor, and not the hypnotized will.

LEAD POISONING AND ARTERIOSCLEROSIS

To the Editor:—A patient, 58 years of age, has had chronic lead poisoning of eight to ten years' duration. There is a history of a lead line, typical colics, weakness, peripheral pain without paralysis, typical blood picture and normal blood pressure without evidence of renal involvement. The urine has always been entirely normal and there has been no peripheral edema. A few years ago symptoms of a peripheral occlusive vascular disease of the right leg developed which was diagnosed elsewhere as Buerger's disease and also as endarteritis obliterans. A progressive change occurred which led to gangrene requiring amputation. Now it is claimed that the occlusive vascular disease which required the amputation was due to the chronic lead poisoning. It is my understanding that this does not occur in lead poisoning without associated renal damage. Allen, Barker and Hines in their book "Peripheral Vascular Diseases," page 357, stated, "certainly lead poisoning cannot be considered to be a factor in the great majority of cases of arteriosclerosis and there is considerable question as to whether it ever produces typical arteriosclerotic lesions." Does chronic lead poisoning with normal renal function and normal blood pressure ever produce a peripheral occlusive vascular disease sufficient to cause gangrene requiring amputation?

William W. Leake, M.D., Chicago.

ANSWER.—It is highly unlikely that lead causes arteriosclerosis or accentuates an existing one. Persons exposed to a lead hazard do not appear to have more arteriosclerosis than similar groups of workmen in other trades. As in this patient, the blood pressure appears unaffected by lead poisoning. Arteriosclerotic gangrene is not a manifestation of lead intoxication.

SIZE OF BRAIN

To the Editor:—Please send me details of method of calculating size of living brain based on three linear dimensions of head, as described in Berry's "Brain and Mind," Macmillan, 1928.

M.D., Pennsylvania.

ANSWER.—Berry's method is to obtain measurements of (1) length of head; this is a caliper measurement from the most prominent point of the glabella to the most distant point in the midline at the back of the head; (2) breadth of head, the greatest distance obtainable by the calipers applied to the parietal eminences; (3) height of head, the highest point of the cranium vertically above the center of the external auditory meatus; these measurements are in millimeters and are applied to the following formula:

$$\text{Brain capacity} = 0.000337 \times (\text{length} - 11 \text{ mm.}) \times (\text{breadth} - 11 \text{ mm.}) \times (\text{height} - 11 \text{ mm.}) + 406.01$$

The subtraction of 11 mm. from each of the three measurements is the allowance made for the thickness of the skull and the over-all soft parts. The multiplication of the first four numbers with the addition of the fifth is believed to give the capacity of the brain in cubic centimeters.

TULAREMIA ENCEPHALITIS

To the Editor:—A patient had early papilledema, some sensory changes and a tendency to weakness of the left side of the body. Brain tumor was diagnosed and the patient was referred to a neurosurgeon. Diagnosis was confirmed and operation performed. Nothing was found except encephalitis which was believed to be due to an old case of tularemia. What treatment can be given this man? Would any of the biologicals such as streptomycin offer hope? Would roentgen therapy be of benefit?

Ben Raney, M.D., Linton, Ind.

ANSWER.—Infection of the brain in tularemia has been reported, but in this region of the country it must be rare. The difficulty would lie primarily in substantiating such a diagnosis. Localized encephalitis from other sources has been confused with tumor for the reason stated in the question. However, encephalography, or, what would be probably better in this case, ventriculography, would have ruled out a space-occupying lesion. As far as is now known, neither streptomycin nor high voltage roentgen therapy would be of any avail against the bacillus of tularemia. The best treatment would probably be attention to general health and hygiene with, perhaps, iodides in fairly large doses.

HEREDITY OF BIRTH MARKS

To the Editor:—Recently a young primiparous woman gave birth to a female infant with a "port wine stain" occupying the entire lateral surface of right foot, leg, vulva and sacral area. The baby was otherwise normal. The mother is considerably upset over this birth mark and has asked for sterilization, even though the couple desires more children. Neither parent nor known relatives have birth marks. What are the chances of a second baby's having similar marks?

Louis N. Speer, M.D., Ottawa, Kan.

ANSWER.—Birth marks or nevi are of many different types. Some of them have been shown to have some hereditary basis, occurring at times in three or four generations. Cockayne, "Inherited Abnormalities of the Skin and its Appendages," (New York, Oxford University Press, 1933) is a good source for detailed information on the subject. Many cases of birthmarks, of the type described, however, appear singly in families; i. e., without evidence of a hereditary basis. Therefore it appears reasonable that the probability of a second child's showing a similar condition is low. Sterilization is hardly indicated.

SPERMATOZOAN IMMUNITY

To the Editor:—A patient requests information on the possibility of temporary sterility of the wife by injection of the husband's semen. I have never heard of the idea and knew nothing of it. Neither have several gynecologists whom I have consulted.

M.D., California.

ANSWER.—A good deal of experimental work has been done on animals with the aim of producing a so-called sperm immunity in the female. Injection of spermatozoa, both from the same and from other species, has evoked antibodies which can immobilize and agglutinate spermatozoa in vitro. But in most of the experiments reported the female animals thus "immunized" have continued to breed with undiminished fertility.

A few similar attempts have been made in human beings, with generally inconclusive results. Since neither the degree nor the duration of the possible immunity to pregnancy can be predicted, this method would appear to be among the most unreliable of contraceptive technics.

PNEUMOTHORAX IN PNEUMONIA

To the Editor:—Could pneumothorax be the cause of death in a patient 45 years of age who died twenty-six days after the onset of lobar pneumonia?
W. B. Shore, M.D., Anchorage, Alaska.

ANSWER.—Pneumothorax could be the cause of death of any one regardless of age, or of immediately preceding pneumonia, as a result either of the so-called pleural shock or of extreme displacement of the mediastinum; and in pneumonia or other disease, by reducing further the available amount of aerating lung tissue. Atelectasis during lobar pneumonia is not uncommon, but pneumothorax is rare and occurs chiefly as a result of perforation by secondary pulmonary abscess or empyema. An instance of spontaneous pneumothorax during pneumonia is illustrated in "The Pneumonias," by H. Reimann, Philadelphia, W. B. Saunders Company, 1938, page 91.

Artificial pneumothorax was once used as a therapeutic measure for lobar pneumonia and for a brief time in the 1930's was popularized by Blake. The subject is discussed in "Pneumonia," by R. Heffron, New York, the Commonwealth Fund, 1939, on pages 611, 749 and 769.

"PERMUTIT"

To the Editor:—Please give information or references to use of "permutit," said to be a chemical which removes salt from a normally ingested diet, making a salt-free or salt-poor diet unnecessary in cardiac and hepatic cases.

Willis P. Baker, M.D., Santa Ana, Calif.

ANSWER.—During the war a number of compounds were tried for their effectiveness in the desalination of sea water. Among the various substances studied were certain resins or ion exchange materials and zeolites, or "permutit." For example, a sodium or calcium resin in gastric juice would adsorb the hydrogen ion and give off sodium, whereas an acid resin in the intestine would adsorb sodium, magnesium, potassium and calcium and give off hydrogen ions. Zeolites or certain inorganic materials act analogously.

W. Dock (Tr. A. Am. Physicians 49:282, 1946) used a resin made by the American Cyanamid Company which in 2 ounce (56.7 Gm.) amounts would remove the sodium in 3 Gm. of sodium chloride. One generally thinks of "permutit" as being an inorganic material, but at a recent meeting of the American Chemical Society it was reported that "permutit Z" was used to adsorb sodium (Abstracts, 113th Meeting Am. Chem. Soc., Chicago, April 19-23, 1948, p. 2c). "Permutit Z" is actually an ion exchange resin made by the Permutit Company which adsorbs not only sodium, but also magnesium, potassium and calcium.

The use of the ion exchange resins orally for the absorption of sodium is now under laboratory investigation. Acid resins should not be used therapeutically now unless the physician is prepared to study the mineral balance of his patient.

SCLEROKERATOSIS

To the Editor:—A young matron, aged 24, has had, since the age of 8, four recurrences of tubercular scleritis and keratitis. Each attack has been prolonged in course and has been treated by rest and gradually increasing doses of old tuberculin. She has never had evidence of other tubercular lesion despite thorough examination and roentgenogram of the chest at each attack and occasional observation in the intervals. This patient has just had a recurrence for which the described treatment has been given. Has there been any recent development in the treatment of tubercular eye conditions which would improve on this regimen? Is streptomycin of any use in this condition?

W. F. MacDonald, M.D., Schenectady, N. Y.

ANSWER.—The local treatment for sclerokeratosis is atropine sulfate 1 per cent to 3 per cent, twice daily to keep the pupil fully dilated. Cases resistant to the usual treatment sometimes respond to beta rays or Grenz rays. The dosage of beta rays is a total of 175 to 200 per cent erythema dose given over four to six weeks in one course, which may be repeated. The dosage of Grenz rays is 452 roentgens filtered through 0.024 mm. of aluminum twice a week for five treatments. The systemic treatment for sclerosing keratitis is salicylic acid 20 grains (1.29 Gm.) every three hours for five doses. If the diagnosis of tuberculosis is made by subcutaneous injection of old tuberculin a course of therapeutic tuberculin may be given. Streptomycin has not been reported as used clinically. However, streptomycin could be used in 0.5 Gm. doses twice a day, and one should try to give a total dose of 65 Gm. if one believes that the patient would not experience damage to the vestibular branch of the eighth nerve.

ALOPECIA IN WOMEN

To the Editor:—A 58 year old married white woman began losing her hair about eighteen months ago. Thinning has been generalized, but most pronounced in the vertex and frontal regions. Loss of pubic or axillary hair has not occurred. About one year ago she noticed moderate growth of hair on the upper lip, legs and forearms. Menopause occurred at age 50. Her general health has always been good. History is essentially negative. Two brothers were prematurely bald in their late twenties. Examination reveals the following: The scalp is clean, almost shines. The hair is coarse and dry. Numerous broken hairs can be seen. The skin is of normal texture for one of her age. A noticeable but not prominent growth of hair occurs on the upper lip. The patient is about 15 pounds (6.8 Kg.) overweight. She is alert and appears to be emotionally well balanced. The blood pressure is 150 systolic and 88 diastolic; pulse rate 80; temperature 98.6 F. The Kahn reaction was negative. The red blood cell count was 3,900,000; the hemoglobin 80 per cent. Basal metabolic rate has not been obtained. At the present she is receiving thyroid, 1 grain (0.06 Gm.) daily. Suggestions for therapy and further investigation are requested. Is there rationale for use of pituitary extract in a case of this kind?
M.D., Texas.

To the Editor:—Is excessive loss of scalp hair in a 42 year old woman, without other menopausal symptoms, associated with an endocrine factor? Some loss of hair—beyond physiologic amount—has occurred for the past ten years, but lately this has become greatly accelerated. No dermatologic condition of the scalp exists. The hairs are thin and break off easily in ordinary combing. The frontal and occipital regions in particular have become devoid of much hair. No definite area of alopecia exists, but there is a general thinning of hair over the entire scalp. Associated excessive loss of hair or growth does not occur at present anywhere else on the body. There has been some hypertrichosis of the face in the past. 1. Can nervous or mental strain be an etiologic factor? 2. Would a past history of high cervical radiculitis with roentgen therapy (over eight years ago) account for excessive loss of hair now? 3. This condition is not familial in the patient's family. What is the prognosis for recession or progression? 4. How commonly do women under 50 have to use transformations because of excessive loss of hair not due to disease of the scalp? 5. Is stimulating scalp treatment of value?
M.D., California.

ANSWER.—Apparently both of these patients have male pattern baldness, which is relatively rare in women. Students of the subject generally agree that in the production of common baldness many factors play a role, particularly androgenic influences and heredity. According to Osborn's study, common baldness is inherited as a sex-limited trait dominant in men and recessive in women, and it is directly inherited from father or mother to son even though the mother herself is not bald. When the inheritance is duplex, baldness appears in women. Hamilton has pointed out that the lack of baldness among eunuchoid men, the subsequent development of baldness in these men after treatment with androgenic substances, and the presence of male pattern baldness in women with adrenal virilism or arrhenoblastoma are all evidence indicative of androgenic influence.

All women with male pattern baldness, therefore, should be examined for evidence of endocrine abnormalities, particularly of the adrenal glands. In the first patient, it would be well to determine the basal metabolic rate before administering more thyroid substance. Sufficient reason does not appear in this case to administer pituitary extract. In the second patient, it is unlikely that nervous strain is playing a role in the production of her baldness, nor would a history of cervical radiculitis treated with roentgen rays eight years previously be a factor. In general, the prognosis is decidedly guarded, for such baldness may rarely progress to the point where a transformation has to be worn. Treatment with stimulating measures is usually worth the effort expended: massage either with the fingers or an electric device; "hair tonics," i.e., scalp lotions containing a rubefacient, and suberythema doses of ultraviolet rays. For these 2 patients, it might also be well to institute therapy with estrogenic substance.

ALASKA ASTHMA

To the Editor:—What is the incidence of asthma in Alaska? Are people who go there from the Ohio area for example benefited or made worse?
P. C. Rond, M.D., Columbus, Ohio.

ANSWER.—Statistics on the incidence of asthma in Alaska are not available. The likelihood of benefit to an asthmatic person from Alaska climate is dependent primarily on the type of asthma. If the asthma is due to such seasonal allergens as ragweed pollen or mold the chances for relief are excellent. If city smoke and dust are known to be potent factors in the individual case, improvement in Alaska is likely. On the other hand, if the asthma is perennial or of the infectious type, or aggravated by damp or cold weather, the Alaskan climate may aggravate the condition. In many instances the factors involved are so indeterminate that only an actual trial residence can settle the issue.

PEPTIC ULCER

To the Editor:—Do ulcers of the stomach, or peptic ulcers, occur in absence of gastric hydrochloric acid? A patient was told by a consultant that he had an ulcer and anacidity, and dilute hydrochloric acid was prescribed.

A. B. Hooton, M.D., Olar, S. C.

ANSWER.—Assuming that a small ulcerative lesion of the stomach is actually present, as verified by the clinical history and roentgenologic examination, the absence of free hydrochloric acid, especially after stimulation with histamine, would make necessary the exclusion of carcinoma in particular, also gastric syphilis, tuberculosis or lymphogranulomatous lesion. With a stimulus like the Ewald meal or its modifications, the lack of free hydrochloric acid in the gastric contents is occasionally noted, even in the presence of an active benign ulcer, especially on single aspiration. Under the circumstances it would be inconsistent to prescribe hydrochloric acid, assuming the presence of a roentgenologically demonstrable gastric lesion.

SECRETORY OTITIS MEDIA

To the Editor:—A patient had recurrent attacks of serous otitis media for two years, and a fluid level would be seen behind the ear drum. This was treated, as the recurrence appeared, by paracentesis with a 20 or 22 gage needle and suction. After aspiration, the ear would remain free for three to four weeks, then the fluid would gradually accumulate. Finally roentgen examination of the mastoid showed mastoid involvement, and a simple mastoidectomy was performed. The cells were broken and filled with debris. The operation apparently was done completely and the area healed nicely except that there was a moderate amount of drainage of this serous material. It was kept open for a while and finally allowed to close. There was a prompt reappearance of the serous material behind the ear drum. Consultation has not helped, and we are thinking of making a permanent perforation of the ear drum in the hope that while this will not prevent the formation of the fluid it will at least allow it to drain whenever it forms. I would appreciate some help on this problem.

Kennard Yaffe, M.D., Baltimore.

ANSWER.—Serous otitis media, or as is more often called, secretory otitis media, is generally due to obstruction of the eustachian tube with resulting negative pressure in the middle ear cavity and accumulation of serous transudate. Removal of the obstruction to the eustachian tube may result in spontaneous resolution. If the fluid has been present for some time, a paracentesis of the tympanic membrane may be necessary to assure resolution. Where the condition exists without visible pathologic change at the mouth of the tube, it is frequently on an allergic basis. Eosinophils can be demonstrated in the serous fluid in such cases. Until the underlying allergy is discovered and removed, the condition tends to recur. The history, cutaneous tests and particularly the use of elimination diets should be employed to find the offending substances.

RECURRENT ERYSIPELAS

To the Editor:—What is the prevention of recurrent erysipelas of the right arm in a woman who has had nine attacks in five years following a right radical mastectomy? Moderate lymphedema occurs. Dermatomyositis is absent. Streptococcus vaccines, both stock and autogenous, have not been of value, nor has 70 per cent alcohol applied to the skin.

Milton Kissin, M.D., New York.

ANSWER.—The fact that erysipelas is noted for its tendency to recur would indicate that treatment aimed at inducing immunity is somewhat less than satisfactory. Several authors, however, report good results from the use of Streptococcus erysipelatis toxin and they stress the importance, too, of eradicating foci of streptococcus infections in sinuses, teeth and tonsils. Treatment with toxoid may be worth a trial in this case. In the past, foreign proteins, such as typhoid vaccine and milk, have had their advocates. If the patient should suffer another attack of erysipelas, it would be well to treat her with huge doses of antibiotics and for a longer period than is usual.

CATARACT

To the Editor:—I have opacities in both lenses with visual loss of about 50 per cent. What is the present status of operation of the soft lens?

M.D., California.

ANSWER.—Whenever the vision is decreased by the lens opacity sufficiently to interfere with the patient's daily life a surgical operation for removal of the opacity is justifiable. The amount of useful vision in a cataractous eye varies with the patient's work, mental attitude and temperament. If a decided handicap results with only a slight decrease in vision the operation is advisable.

It is unnecessary to wait until the cataract becomes more mature as was the previous custom.

EFFECTS OF SMOKING

To the Editor:—I have recently been told that my symptoms suggested an occlusive arterial disease in my feet and that a possibility of coronary insufficiency exists. My doctor advised that I stop smoking. I am aware that this is the usual advice, but I needed some scientific evidence to convince myself of the necessity of the giving up a lifelong pleasurable habit, and so tried to look up the subject. In five standard texts on the practice of medicine, the only reference to tobacco, smoking or nicotine was a short sentence stating that a toxic amblyopia results from tobacco. What is the effect of smoking cigarettes? If the practice is harmful, how does one treat withdrawal symptoms? Is the resulting nervousness less harmful than the practice of smoking, especially in coronary disease?

M.D., California.

ANSWER.—The effect of smoking cigarettes on the circulation of the lower extremities has been shown to be deleterious in a person who already has a deficient circulation. Cigarettes are especially bad, since they are generally inhaled. It has been shown that smoking reduces the amount of blood going to the feet by a considerable amount. Only one way to stop smoking is effective, and that is to stop it 100 per cent. The withdrawal symptoms are not harmful and should not effect coronary heart disease. Lampson reported some investigations on the effect of smoking on the lower extremities and showed a diminution in blood flow for several hours after smoking cigarettes. This was published in *THE JOURNAL* (104:1963, 1935). Maddock and Coller also reported peripheral vasoconstriction after smoking (*Ann. Surg.* 98:70, 1933). Little question exists that tobacco smoking, especially cigarettes, does produce a certain degree of vasoconstriction. There is such a large margin of safety in the normal person that this degree of vasoconstriction does not cause any serious effects. However, in a patient with a diminished arterial circulation any decrease in the amount of blood flow reaching the extremity, caused by even a slight degree of vasoconstriction, may be sufficient to produce serious effect. There is little if any evidence at hand that tobacco causes constriction of the coronary blood vessels. However, Theis and Freeland (*Ann. Surg.* 113:411, 1941) reported that smoking in patients with thromboangiitis obliterans caused a greater reduction in the oxygenation of the blood than in the normal person. This observation if true might indicate that it is also deleterious in patients with coronary disease. It would appear that the majority of evidence is that tobacco smoking is harmful for patients with peripheral vascular disease. The benefits derived from cessation of smoking far outweigh deleterious effects that might be produced by the withdrawal of smoking.

CRYPTORCHISM

To the Editor:—In the May 15, 1948 issue of *The Journal* is a query concerning a case of bilateral cryptorchism in a man of 21, with complete aspermia. The inquirer's question is whether hormone therapy is advisable or surgery is indicated.

In connection with your answer, "Unless the patient has some evidence of endocrine dysfunction, there is no indication for any hormonal therapy and a bilateral orchiopexy is indicated," I want to call your attention to the generally accepted routine procedure in cases of cryptorchism, which is to try to cause the testicles to descend by endocrine therapy before resorting to surgery, i.e., orchiopexy, which is acceptable only in mechanical obstacle to descent. Since in this case, the testicles are retained in the abdominal cavity, the surgical intervention (in addition to the operative risk) may prove harmful to the glands, particularly if and when a short pedicle will have to be elongated, with a possibility of complete and permanent atrophy of the glands.

P. M. F. Bishop (*Guy's Hosp. Rep.* 94:12-74, 1945), considers it well to administer a preoperative course of endocrine therapy, not only to insure development of the testis, but also to assist in lengthening the cord, if necessary. I think it is indicated in the inquirer's case because of such evidences of hypogonadism as complete azoospermia and considerable overweight (Froehlich's type of hypogonadism).

S. I. Movitt, M.D., Los Angeles.

DEXEDRINE

To the Editor:—The claim of Dr. G. Raymond Johnson of Ottumwa, Iowa, in *Queries and Minor Notes*, *The Journal*, June 19, page 756, that "dexedrine" produced diabetes in one patient is invalid, in view of your comment that no evidence exists which supports this opinion. We question your statement that diabetic symptoms may be aggravated by the drug and that diabetes is a contraindication to its use.

In a study just completed, we found no instance of aggravation of diabetes by "dexedrine" in a series of 55 obese diabetic patients. In fact, 31 of these patients presented improvement as measured by the glucose tolerance test or by reduction of insulin requirement. The improvement noted in carbohydrate tolerance was probably the result of dietary restrictions and weight reduction. Clinically, "dexedrine" appears to have no direct effect on the diabetes or its course.

Henry Dolger, M.D.,
Kermit E. Osserman, M.D., New York.

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EARLY DIAGNOSIS OF CANCER BY STUDY OF EXFOLIATED CELLS

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and

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Until the cause or causes of cancer are discovered, the only way cancer can be controlled is by early diagnosis and the consequent eradication of the malignant lesion at its inception. In the majority of cancers early diagnosis is not now possible. How is the physician to suspect, much less perform a biopsy of, a symptomless cancer of the stomach or lung which cannot be visualized? How shall one suspect cancer of the cervix in the presence of a grossly normal organ and before abnormal bleeding? In many parts of the body malignant lesions present for months or even years may be attended by their first clinical symptom only after invasion or metastasis has taken place.

Because of its recognized value and in order to check its misuse we propose to outline the present status of the cytologic method of cancer diagnosis. We believe that in certain regions of the body an earlier diagnosis of cancer can be made through proper use of this method than can be achieved by any other means. Particularly is this true of cancer of the uterus and the lung. There is reason to hope that detection of early cancer of the stomach and the urinary tract may also become practicable by the use of the cytologic technic.

After six years of extensive experience with the study of exfoliated cells at the Massachusetts General Hospital, it is our conviction that the cytologic method has become an essential procedure for the early diagnosis of many types of malignant disease. In its use, however, as in any diagnostic maneuver, judgment must be used, and those making the diagnosis must be completely familiar with the technic. Forty years ago William Osler wrote: "To be exploited prematurely in practice is the common fate of all new scientific facts. Not content to wait for full knowledge, men hastily draw conclusions from imperfect data." Exploitation of the diagnostic method to be discussed has already occurred.¹ Reliance on a diagnosis, for or

against cancer, submitted by an inexperienced "cytologist" constitutes malpractice as surely as does the performance of a major operation by an inadequately equipped surgeon. The misuse and exploitation of this method by untrained persons cannot be tolerated.

The story of cytologic diagnosis begins over one hundred years ago when Pouchet² first examined unstained preparations of vaginal fluid in an attempt to analyze the normal sexual cycle. Seventy years later, in 1917, Stockard and Papanicolaou,³ seeking a way of studying the consecutive stages of estrus in the guinea pig, reexamined the vaginal secretion. They developed the technic of rapid fixation and staining which made possible for the first time accurate cytologic observation of the vaginal fluid. In the rodent, the study of the vaginal secretion proved unexpectedly rewarding. A specific cytologic picture was seen for each successive phase of the estrous cycle, thus making accurate identification of each phase possible. In human beings, however, results of vaginal smears have proved disappointing. Although a vaginal epithelial rhythm is present in women, the clearcut sequence of cytologic events observed during the estrous cycle in the guinea pig is not observed. Specific changes dependent on ovulation are not seen. In the normal woman, the changes visible in the vaginal secretion following ovulation are due not to the specific action of progesterone but to the decrease in estrogen secretion which follows follicle rupture. Similar changes occur whenever estrogen is suddenly withheld from a previously estrogen-treated castrate female subject. Papanicolaou⁴ said, "The vaginal smear offers only indirect evidence as to ovulation and the time of its occurrence." Quantitative changes in the amount of estrogen, however, may be estimated by the vaginal smear, and the test is, therefore, useful in determining the functional activity of the ovaries (or of extraovarian sources of estrogen) and in judging the adequacy of estrogen therapy in postmenopausal women.

In 1923 Papanicolaou became impressed by the abnormal features of certain cells observed in the vaginal secretion of women with cancer of the uterus and suggested that the vaginal smear should be useful in the diagnosis of malignant uterine disease. His first

From the Laboratory of the Vincent Memorial Hospital (the Gynecological Service of the Massachusetts General Hospital).

Read at the General Scientific Meeting at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 21, 1948.

1. Scheffey, L. C., and Rakoff, A. E.: The Cytology Test for Uterine Cancer, *Philadelphia Med.* **43**: 435, 1947. The Papanicolaou Test for Uterine Cancer, editorial, *J. A. M. A.* **136**: 331-332 (Jan. 31) 1948.

2. Pouchet, F. A.: *Théorie positive de l'ovulation spontanée et de la fécondation des mammifères et de l'espèce humaine, basée sur l'observation de toute la série animale*, Paris, J.-B. Baillière, 1847.

3. Stockard, C. R., and Papanicolaou, G. N.: The Existence of Typical Oestrous Cycle in Guinea-Pig, with a Study of Its Histological and Physiological Changes, *Am. J. Anat.* **22**: 225-283, 1917.

4. Papanicolaou, G. N.: A General Survey of the Vaginal Smear and Its Use in Research and Diagnosis, *Am. J. Obst. & Gynec.* **51**: 316-328, 1946.

publication⁵ on this subject appeared in 1928 and a second⁶ in 1933. Little interest, however, was aroused by his early observations. Six years devoted to a study of other aspects of vaginal cytology passed before Papanicolaou again⁷ in 1941 reiterated his conviction that uterine cancer could be accurately diagnosed by vaginal smear. This publication focused our attention on the problem and we⁸ were the first to confirm Papanicolaou's results. Evaluation of the method is still in progress and its applicability to the diagnosis of cancer in other organs besides the uterus is under active investigation.

The biopsy remains the final method of establishing a diagnosis of cancer; until recent years it has been the only means by which a diagnosis of cancer could be made. Any alternative method to be acceptable must be theoretically sound, statistically reliable and superior, at least in certain respects, to biopsy. Evidence will be presented that the cytologic method fulfils these requirements.

RATIONALE

Diagnosis by the cytologic method depends on the fact that malignant tumors on any free surface desquamate tumor cells into the surrounding medium. It is known that there exists a continuous exfoliation of cells from every epithelial surface of the body. Thus the vaginal secretion, the sputum and the urine normally contain cells desquamated from the corresponding epithelial surfaces. There is evidence⁹ that tumor cells may desquamate even more rapidly than normal cells and that such malignant cells can be accurately identified. If the presence of tumor cells in any body fluid is correctly established, such cells must have taken origin from an area of tumor proximate to or in contact with the fluid examined.

Criteria have been established¹⁰ for the identification of malignant cells and their differentiation from the many types of normal cells exfoliated into the body fluids. These criteria are based on recognizable morphologic changes in the nucleus and cytoplasm of cells found in the body fluids of patients with malignant disease, and not found in the absence of malignant lesions. Direct smears from malignant tumors obtained at operation show cells identical with those present in the body fluid of the person bearing the tumor.^{8a}

That fundamental alterations in structure accompany the transition of normal into malignant cells is suggested by observations of Firor and Gey.¹¹ These investigators studied in vitro cultures of normal rats' fibroblasts. On three occasions some of the normal fibroblasts became permanently altered; inoculation of young

healthy rats with the altered cells was followed by the development of sarcomas at the point of inoculation.

The authors said:

At first the newly altered cells showed nuclei that were slightly larger than those of the cells of origin. Later the nuclei became irregular in outline, very granular, and in stained preparations, the altered nuclei were hyperchromatic. . . . The changes just described were shown to be coincident with the development of malignant characteristics, for when colonies of altered and unaltered cells were inoculated into the rats, the former produced sarcoma at the sites of inoculations, the latter never did. It is significant that the cellular changes accompanying malignant transformation in rats' fibroblasts, namely, enlargement of the nucleus, enlargement of nuclear granules and nuclear hyperchromatism in stained specimens, are identical with the morphologic alterations commonly observed in cells desquamated from human cancer. The differentiation of cancer cells from normal cells in body fluids depends to a large degree on these very criteria.

COLLECTION OF MATERIAL

The collection of material for examination is simple. In the case of vaginal smears, a pipet 6 inches (15 cm.) long with capillary opening and capped by a rubber suction bulb is introduced into the posterior vaginal fornix; the bulb is released and aspirated fluid is blown on a previously marked glass slide, which is immediately dropped into a fixative of equal parts of 95 per cent alcohol and ether. Neither douching nor pelvic examination should precede the collection of the specimen.

Sputum is spread thinly on glass slides and similarly fixed. Search is made to obtain blood-flecked bits of sputum for examination.

For examination of the urine an entire fresh morning specimen is centrifuged and the sediment spread on three slides which have been previously covered with egg albumin. The slides are fixed in alcohol and ether. Ten cubic centimeters of 40 per cent formaldehyde may be added to the urine if immediate centrifuging is not possible.

For the cytologic study of gastric contents our laboratory now examines two specimens. The first is the fasting gastric content, secured through a Levin tube with additional openings cut in its terminal 8 inches (20 cm.). The tube is passed in the usual manner and the patient allowed to drink water during its passage. After the stomach is emptied, 100 cc. of isotonic solution of sodium chloride is injected and allowed to come in contact with all surfaces of the organ by turning the patient on either side and face downward and by having him walk about. The fluid is forcibly aspirated and reinjected several times during this period. Both specimens are centrifuged and the sediment smeared thinly on glass slides and fixed and stained in the usual way.

All preparations are stained by Papanicolaou's method, details of which may be found in previous publications.¹²

While the technic of preparation is simple, the ability to make accurate diagnoses by this method is difficult to acquire, obtainable only by months of intensive training and perfected only through constant use. A physician or laboratory technician examining a few preparations a month cannot obtain competence in this diagnostic technic. The differentiation of cancer cells from normal cells, be they in tissue preparations or smears, belongs within the province of the pathologist. If diagnosis by exfoliative cytology is as valuable as many of us believe, it must become the responsibility of the pathologist to acquire the same skill in the interpretation of smears that he now possesses in the diagnosis of tissue sections.

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8. (a) Meigs, J. V.; Graham, R. M.; Fremont-Smith, M.; Kapnick, I., and Rawson, R. W.: *The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer*, *Surg., Gynec. & Obst.* 77: 449-464, 1943. (b) Meigs, J. V.; Graham, R. M.; Fremont-Smith, M.; Janzen, L. T., and Nelson, C. B.: *The Value of the Vaginal Smear in the Diagnosis of Uterine Cancer*, *Surg., Gynec. & Obst.* 81: 337-345, 1945.

9. Coman, D. R.: *Decreased Mutual Adhesiveness, a Property of Cells from Squamous Cell Carcinomas*, *Cancer Research* 4: 625-629, 1944.

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11. Firor, W. M., and Gey, G. O.: *Observations on the Conversion of Normal into Malignant Cells*, *Ann. Surg.* 121: 700-702, 1945.

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CANCER OF THE UTERUS

Of the two types of uterine cancer, carcinoma of the cervix presents by far the more serious problem. Found in women in their forties and early fifties, five times as often as is endometrial cancer, cervical carcinoma develops more insidiously and metastasizes earlier. Its occurrence, moreover, proves a calamity not only for the patient but for her entire family, as the majority of the victims are women in the prime of life, often the mothers of young children.

Although the cervix is readily visualized and cancer of this organ is believed to give early evidence of its presence either by abnormal bleeding or by the development of a visible lesion, cervical cancer is often still diagnosed only in an advanced stage. Recently it has been recognized that cancer of the cervix may exist for months or years before the appearance of either symptom or sign. The average age at which evidence of cervical cancer appears is known to be 48 years. TeLinde and Galvin¹³ and Pund and Auerbach¹⁴ found 36 years to be the average age for the appearance of carcinoma *in situ*. Younge¹⁵ found carcinoma *in situ* in 135 women, whose average age was 38 years. Thus cancer of the cervix must occur on the average ten years before clinical evidence of its presence.

When abnormal bleeding does appear usually in the late forties, such bleeding is too commonly ascribed by both patient and physician to menopausal irregularity, and examination, therefore, is postponed. At the time bleeding first appears, however, the situation is often already grave. Maliphant,^{15a} studying 837 cases of cervical cancer, observed the disease to be in an advanced stage in 60 per cent of women seen six months after the onset of spotting and advanced disease in 50 per cent of those examined only three months after the onset of spotting. Todd¹⁶ has estimated that from onset of bleeding chances of cure decrease 3 per cent per week. The average delay from the onset of abnormal bleeding to the institution of treatment is seven and a half months.¹⁷ Thus lives are lost because the diagnosis of cancer may not even be suspected until the disease is beyond hope of cure. While routine biopsy, if correctly performed, will reveal most cases of early cancer, biopsy is a hospital procedure except in the office of the gynecologic specialist. It is, moreover, manifestly impracticable to obtain repeated biopsy specimens from symptomless women. The vaginal smear, on the other hand, is technically simple to procure. If sufficiently accurate, the vaginal smear should offer a means of detecting cervical cancer earlier than can be practically accomplished in any other way.

In 1947 statistics concerning approximately 5,000 patients examined by vaginal smear were collected by

Gates and Warren.¹⁸ Estimates of accuracy of the vaginal smear varied from 96 to 99 per cent. However, the authors correctly remarked that by the inclusion in any series of an increasing preponderance of negative results, the apparent accuracy of the test can be made to approach 100 per cent.

Since Gates' and Warren's compilation, Isbell, Jewett, Allan and Hertig¹⁹ have reported 1,045 cases, including 58 proved cases of cancer of the uterus, in which again the over-all accuracy of the vaginal smear was 98.5 per cent. Of 40 cases of carcinoma of the cervix, positive smears were obtained in 39. Of 18 cases of malignant disease of the fundus, however, smears were positive in 15, and negative in 3.

Scheffey, Rakoff and Hoffman²⁰ reported, in 1948, 63 proved cases of cancer in 500 consecutive gynecologic admissions. The over-all accuracy of the vaginal smear method was 95 per cent. However, positive smears were obtained in only 70 per cent of cervical and 67 per cent of endometrial cancers.

Our experience in the Vincent Memorial Laboratory in the years 1942 to 1947 is based on the examination of vaginal smears from 5,621 women, of whom 492 had uterine cancer. All figures are based on the initial smear report. This series includes 113 cases of endometrial carcinoma, in 83 of which diagnosis was made by smear, an error of 26.5 per cent; and 354 cases of cervical carcinoma, in 317 of which diagnosis was made by smear, an error of 10.5 per cent. There have been 69 cases in which a positive diagnosis made by smear was not confirmed at pathologic examination. This represents a "false positive" diagnostic error of 1.3 per cent. It is evident that if cases with proved cancer only are considered, the smear fails to detect the malignant disease in about 20 per cent of endometrial and 10 per cent of cervical carcinoma. As will later be seen, biopsy likewise misses some 10 per cent of cervical cancers.

Of particular interest is a group of preinvasive carcinomas of the cervix studied at the Vincent Memorial Laboratory both by vaginal smear and by biopsy. Sixteen cases have already been reported.²¹ The number has now been increased to a total of 30 cases.

Thirteen of these 30 women (or nearly 50 per cent) presented no gynecologic symptoms. The initial vaginal smear was positive in 23. Biopsies were performed for 27 of the same patients. The results of the initial biopsy were positive in 13, questionable in 4 and negative in 8. In 2 cases no tissue was obtained. In 2 cases in which cancer was missed by vaginal smear, the result of the initial biopsy was correctly positive. Thus in a series of 30 cases, the initial vaginal smear proved significantly more accurate than did the initial biopsy in detecting preinvasive cancer of the cervix.

A comparison of the accuracy of the vaginal smear with that of the biopsy in 181 cases of proved epidermoid carcinoma of the cervix was made by Graham, Sturgis and McGraw.²² In this series the result of

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16. Todd, O. E.: Cancer of the Cervix: Time Wasted, *J. Michigan M. Soc.* 40: 191-196, 1941.

17. Todd.¹⁶ Dodge, R. H.: Carcinoma of the Cervix: Time Lost Before Treatment, *Virginia M. Monthly* 69: 200-203, 1942. Leach, G. E., and Robbins, G. F.: Delay in the Diagnosis of Cancer, *J. A. M. A.* 135: 5-8 (Sept. 6) 1947.

18. Gates, O., and Warren, S.: A Handbook for the Diagnosis of Cancer of the Uterus by the Use of Vaginal Smears, Cambridge, Mass., Harvard University Press, 1947, p. 8.

19. Isbell, N. P.; Jewett, J. F.; Allan, M. S., and Hertig, A. T.: A Correlation Between Vaginal Smear and Tissue Diagnosis in 1,045 Operated Gynecologic Cases, *Am. J. Obst. & Gynec.* 54: 576-583, 1947.

20. Scheffey, L. C.; Rakoff, A. E., and Hoffman, J.: An Evaluation of the Vaginal Smear Method for the Diagnosis of Uterine Cancer, *Am. J. Obst. & Gynec.* 55: 453-460, 1948.

21. Fremont-Smith, M.; Graham, R. M., and Meigs, J. V.: Vaginal Smears as an Aid in the Diagnosis of Early Carcinoma of the Cervix, *New England J. Med.* 237: 302-304, 1947.

22. Graham, R. M.; Sturgis, S. H., and McGraw, J. A.: A Comparison of the Accuracy in Diagnosis of the Vaginal Smear and Biopsy in Carcinoma of the Cervix, to be published.

the initial biopsy was correctly positive in 90 per cent; the initial vaginal smear was correct in 91 per cent. The two methods combined achieved a diagnostic accuracy of 99 per cent. In this connection it seems appropriate to quote the words of two conservative investigators. Isbell and Hertig said: "The [vaginal smear] method has proved unexpectedly valuable in the study of early carcinoma and carcinoma-in-situ as well as in the diagnosis of more advanced cases." Gates and Warren commented: "Overemphasis on the statistical accuracy seems to put the stress in the wrong place . . . the thing that matters is whether the use of the method will discover cancer and initiate treatment earlier than would otherwise be done."

Annual deaths in the United States from carcinoma of the cervix approach 17,000. All, or a great majority, of these women could be saved were the cancer discovered sufficiently early. In how many women will early cancer of the cervix be found? Estimates of the incidence of carcinoma *in situ* of the cervix vary from 0.29 per cent (Gates and Warren¹⁸) to 3.7 per cent (Pund and Auerbach¹⁹). Younge¹⁵ examined 955 routine cervical biopsy specimens taken in the Out-patient Department of the Free Hospital for Women and found 11 instances of carcinoma *in situ* (1.15 per cent).

The majority of women with preinvasive cancer have no symptoms, and the cervix gives little indication of disease. Of Pund's and Auerbach's 47 patients, only 1 out of 4 had abnormal bleeding, and the presence of cancer was not recognized from the gross appearance of the cervix in a single case. Of Younge's 135 patients, 46 per cent were symptomless, 80 per cent showed what was described as an "innocent erosion" of the cervix, 7 per cent presented frankly normal cervixes and in only 6 per cent was the cervix considered "suspicious." In 2 of Younge's patients, each with a diagnosis from biopsy of carcinoma *in situ*, invasive carcinoma developed after intervals of three and a half years and one year, respectively. The way to prevent the development of uncontrollable advanced cervical cancer is by discovery and eradication of the early lesion before invasion or metastasis has occurred. It is evident that detection of early unsuspected cervical cancer should be possible by vaginal smear.

Few reports of screening by vaginal smear have appeared. Pund and his collaborators²³ detected 7 cases of preinvasive carcinoma by routine endocervical smears. The total number of women examined was not given. Kraushaar²⁴ took a single vaginal smear from all women over the age of 30 admitted to the Hospital of the University of Iowa since January 1947; 1,931 women were so examined. Sixty-two positive smears were obtained, 52 of which were confirmed by tissue pathologic examination and 2 by clinical examination. Negative results of biopsies were obtained in 3 cases with positive smears. In 12 cases the smear failed to disclose uterine carcinoma later discovered in tissue section. In reference to a larger series, of about 4,000 cases, Kraushaar wrote: "We have detected by smears and proven by tissue sections

12 cases of carcinoma of the cervix, either as carcinoma-in-situ or early epidermoid carcinoma; in which the cervix appeared to be normal clinically." Palermo,²⁵ screening 827 gynecologic patients, discovered three unsuspected cervical carcinomas. Scheffey and Rakoff²⁶ found only 7 cases of uterine carcinoma in a screening of approximately 5,000 cases, including many young women.

We²⁶ have published the results of screening 200 unselected office patients by vaginal smear. The series now totals 358 women, each examined by a single vaginal smear. These women came to the office of an internist for general physical examination. Only 25 complained of either bleeding or abnormal discharge. Six positive smears were obtained, 5 of which were confirmed by pathologic examination—carcinoma *in situ* of the cervix in 4 and endometrial cancer in 1 case. Of the 4 patients with cervical cancer, no gynecologic symptoms were present in 2 and the cervix was normal to visualization in all. This small series tends to confirm previous evidence that about 1 woman in every hundred bears in her cervix an early malignant lesion, often invisible and symptomless. The discovery of even one preinvasive cancer justifies the examination of many smears. Whether screening by smear as a public health measure will become economically-practicable is a question that cannot now be answered.

M. B., a woman of 43, came to my office complaining of diarrhea and arthritis. There had been no bleeding or discharge. Routine examination disclosed a lacerated cervix. Vaginal smears were twice positive for cancer. A biopsy showed carcinoma *in situ*. A Wertheim hysterectomy was performed by Dr. Meigs. According to the pathologic report the cervix appeared normal grossly. Microscopic examination disclosed squamous cell carcinoma *in situ*.

D. C., age 42, complained of a mass in the breast. There was no vaginal bleeding or discharge. The cervix appeared normal. A vaginal smear was doubtful and a repeat smear positive. Results of biopsy were positive for cancer. A total hysterectomy was performed. No gross lesion was visible, but microscopic examination showed squamous cell carcinoma *in situ*.

A. S. had no symptoms. A routine vaginal smear was positive. A week later a second smear was positive and biopsy revealed epidermoid carcinoma *in situ*. A total hysterectomy was performed by Dr. Meigs. Pathologic examination revealed epidermoid carcinoma *in situ*.

Without a routine vaginal smear these and similar cases of early cervical cancer would not have been discovered. How many women in their early forties with neither bleeding nor discharge and with a cervix normal to inspection would be sent to a gynecologist for biopsy, and with what likelihood that a biopsy specimen, if taken, would contain the area bearing the cancer?

At this point a word should be said as to the significance of vaginal smear reports. A negative smear does not exclude the possibility of cancer. As has been stated, the initial smear will miss about 1 case of cervical carcinoma in 10. A report of positive results indicates biopsy or curettage; it does not indicate operation. An occasional false positive result is inevitable. Biopsy confirmation must be obtained in every case before operation is advised.

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24. Kraushaar, O. F.: Personal communication to the authors.

25. Palermo, A. A.: Personal communication to the authors.

26. Fremont-Smith, M., and Graham, R. M.: The Vaginal Smear: Its Value to the Internist, with Report of Diagnosis of Unsuspected Uterine Cancer in Four Cases, *J. A. M. A.*, 137: 921-922 (July 10) 1948.

CARCINOMA OF THE LUNG

In carcinoma of the bronchus, early diagnosis is rarely made. Early in the disease a definitive diagnosis by roentgenogram or bronchoscope is usually impossible. Herbut and Clerf²⁷ stated that by the time cancer is positively diagnosed by bronchoscopic examination or by biopsy, "... the lesion has too often infiltrated such vital structures that surgical extirpation is impossible."

Attempts to diagnose bronchogenic carcinoma by examination of sputum or bronchial secretion have been increasingly successful.

Dudgeon²⁸ (1937) found evidences of carcinoma from the examination of sputum smears in 77 per cent of 56 cases. Gowar²⁹ (1943) reported the observation of tumor cells in 64 per cent of 93 cases. Wandall³⁰ (1944) diagnosed the disease correctly by sputum examination in 84 per cent of 100 cases of bronchogenic carcinoma.

Herbut and Clerf³¹ reported the detection of cancer cells in the bronchial secretion of 25 (92.5 per cent) of 27 consecutive cases with carcinoma of the bronchus; the disease in 12 cases with completely negative results of bronchoscopic examination was correctly diagnosed by smear. These authors stated that by cytologic study the disease in an additional 20 to 25 per cent of cases, with lesions beyond bronchoscopic vision can be diagnosed; and stressed that this percentage represents those cases in which the growth is most amenable to complete surgical removal. To date a total of 800 patients, including 180 with proved bronchial carcinoma, have been examined by Herbut.³² Cancer cells were observed in bronchial secretion of 161, or 89 per cent. By contrast the results of biopsy were positive in only 71 cases, or 39 per cent. Results of examination of secretions were positive and results of bronchoscopy completely negative in 51, or 29 per cent.

McKay and his co-workers³³ studied smears of secretion obtained in 170 bronchoscopic examinations. Of the 54 cases in which bronchogenic carcinomas were encountered, tumor cells were observed in 40 (74 per cent). Three false positive diagnoses were made. In 14 cases of bronchogenic carcinoma (25 per cent), results of bronchoscopy were negative and the smear was positive. Two further cases were reported with peripheral tumors not visualized at bronchoscopy. In both cases the smear was positive for tumor cells. Woolner,³⁴ examining bronchial secretion or sputum from 2,200 patients, obtained 200 positive smears. Only

4 of the 200 smears were proved to be false positive. Negative smears were obtained in about 10 per cent of cases of bronchial carcinoma.³⁵

Diagnoses based on examination of sputum are still regarded with skepticism by the clinical services, although in the Vincent Memorial Laboratory during the past year, not one false positive diagnosis based on examination of sputum has been made.

A 44 year old man complaining of cough of ten days' duration had dullness and bronchial breath sounds over the upper lobe of the right lung. Roentgenograms were suggestive of tuberculosis. Results of three sputum examinations were positive for cancer. On rounds "no one was convinced of the likelihood of tumor." At autopsy carcinoma of the bronchus and abscess of the upper lobe of the right lung were present.

A. G., a man of 63, complained of cough for a period of seven months. The diagnosis based on roentgenologic observations was pulmonary abscess. Cytologic examination of the sputum showed cells consistent with squamous cell carcinoma. Biopsy of a cervical gland, however, showed malignant lymphoma. Bronchoscopy revealed obstruction of the lower part of the right bronchus. Biopsy of material obtained at bronchoscopic examination revealed squamous cell carcinoma.

After the biopsy of the cervical gland, it was natural to assume that the pulmonary lesion represented infiltration by lymphomatous tissue. The smear, however, correctly indicated a second diagnosis, totally unexpected both by the roentgenologist and the clinician.

CANCER OF THE URINARY TRACT

Cancer of the kidney and bladder, even if early, is usually detectable by the classic methods of investigation. Nevertheless, cytologic examination occasionally reveals a malignant process overlooked at endoscopy.

A man of 78 complained of prostatitis and cystitis of ten years' duration. Cytologic examination of the urine sediment showed cancer cells in five smears over a twelve month period, during which time results of cystoscopy were twice negative. In January 1948, a tiny papilloma was seen in the base of the bladder on the left side, biopsy of which showed carcinoma grade IIIB.

I. M., a 60 year old man, complained of hematuria. Biopsy showed chronic and acute cystitis. Clinical diagnosis was benign prostatic hypertrophy. Results of cystoscopy were negative. Urine smears were positive for cancer. Three months later a second biopsy showed carcinoma. A cystectomy was performed.

Statistically, in comparison with examination of other body fluids, examination of the urine has been in our hands the least satisfactory. We have, however, been able to diagnose correctly 71 per cent of bladder carcinomas. Cancer of the kidney has been diagnosed in only 50 per cent of a small series and cancer of the prostate in only 42 per cent. In the urine, moreover, our false positive results have averaged 1 in 10, a figure higher than that occurring in the examination of any other body fluid.

Although the statistical accuracy in examination of urine sediments is not high, we have in a series of 225 cases discovered by this method 3 completely unsuspected cases of cancer, 1 of the kidney and 2 of the bladder.

According to Young³⁶ in only 1 in 5 cases is prostatic cancer diagnosed in a stage suitable for radical prostatectomy. Herbut³⁷ examined the prostatic secre-

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32. Herbut, P. A.: Personal communication to the authors.

33. McKay, D. G.; Ware, P. I.; Atwood, D. A., and Harken, D. E.: The Diagnosis of Bronchogenic Carcinoma by Smears of Bronchoscopic Aspiration, to be published.

34. Woolner, L. B., and McDonald, J. R.: Bronchogenic Carcinoma: Diagnosis by Microscopic Examination of Sputum and Bronchial Secretions; Preliminary Report, *Proc. Staff Meet., Mayo Clin.* **22**: 369-381, 1947.

35. Woolner, J. B.: Personal communication to the authors.

36. Young, H. H.: The Cure of Cancer of the Prostate by Radical Perineal Prostatectomy, *J. Urol.* **53**: 188-256, 1945.

37. Herbut, P. A.: Personal communication to the authors.

tion obtained from 450 patients, 54 of whom had prostatic cancer. Cancer cells were correctly recognized in 39 instances, or 85 per cent. It is evident that in examination of prostatic fluid, as in the examination of bronchial and gastric aspirates, the percentage of correct diagnoses by the cytologic method varies directly with the interest and capability of the physician who collects the specimen. For cytologic diagnosis to be effective, the first requisite is that cancer cells be placed on a slide; the second is the recognition of cancer cells in the stained specimen. In cytologic diagnosis, proper collection of the specimen is as important as skill in interpretation.

GASTRIC CANCER

Because, until moderately advanced, cancer of the stomach usually presents no symptoms, discovery of gastric carcinoma in an early stage is rare. Despite the improvements in surgical technic during the last twenty years, little advantage has accrued to the patient with cancer of the stomach. Eighteen years ago 5 of every 100 patients with gastric cancer entering the Massachusetts General Hospital obtained five year cures. A decade later (1940) 7 of every 100 obtained a five year cure.³⁸ It is still often impossible to decide on roentgenographic evidence whether a given gastric lesion is malignant or not. At the Massachusetts General Hospital during the years 1931-1940, 14 per cent of gastric ulcers clinically (and roentgenologically) considered benign were observed to be malignant, and, conversely, 17 per cent believed to be malignant proved to be benign. The surgeon with the stomach in his hand often cannot determine whether cancer is present or not. It is, therefore, not surprising that in this disease late diagnosis is the rule rather than the exception.

Papanicolaou³⁹ in 1946 reported the recognition of cancer cells in gastric fluid. The following year Papanicolaou and Cooper⁴⁰ published a report on 137 cases, in 27 of which there was gastric cancer. Of the 27, results of cytologic examination were positive in 10, suspicious in 7 and negative in 10. Of smears from 110 patients without cancer, those of only 9 were called suspicious and none positive.

In the Vincent Memorial Laboratory we have studied sediments of gastric fluid from 193 patients. Of 65 patients with gastric carcinoma, positive smears were obtained in 35 (54 per cent). Of 128 patients without cancer, smears were mistakenly reported positive in 3.

While statistically these results are not satisfactory, an individual case not infrequently emphasizes the value of the test in the recognition of gastric cancer and suggests that with improved technic a larger proportion of positive results might be obtained.⁴¹

S. B., a man of 57, complained of dysphagia of six months' duration. A roentgenogram showed spasm of the esophagus; a

second roentgenogram showed no abnormalities. Gastroscopy revealed esophagitis, and a biopsy showed chronic inflammation. Cytologic examination of gastric contents revealed a malignant condition. A repeat gastroscopy showed spasm of the esophagus, and a malignant condition was suspected. At operation extensive cancer of the stomach was observed. Pathologic examination revealed signet ring carcinoma.

A. L., a woman aged 41, complained of regurgitation of nine years' duration and of epigastric pain of four years' duration. A roentgenogram in 1935 had shown a gastric ulcer. Roentgenograms ten years later, in 1945, indicated gastritis. Results of gastroscopy were negative. In 1947 gastroscopy revealed gastritis. One roentgenogram suggested benign polyposis and a second, early in 1948, gastritis. Smears of the gastric fluid were positive for cancer. At operation the surgeon observed evidence indicating gastritis only. Pathologic examination showed adenocarcinoma involving almost the entire mucosa of the specimen.

The next case is an example of the difficulty in recognizing cancer even though the stomach lies in the surgeon's hand.

E. C., 56 years old, suffered for six weeks with pain in the left upper quadrant of the abdomen. Roentgenograms indicated gastric neoplasm. Results of cytologic examination were positive. At operation Dr. Arthur Allen felt a soft movable tumor within the stomach; he expressed the belief that it represented a benign polyp. Only a limited subtotal gastrectomy was performed, and grossly the tumor appeared to be benign. The diagnosis based on pathologic examination was adenocarcinoma with metastasis to regional lymph nodes.

As previously stated, our results in the diagnosis of gastric cancer are so far not statistically satisfactory. However, Graham and Ulfelder from our laboratory⁴² have reported the correct diagnosis by smear in 5 cases of resectable gastric cancer, and in 2 extremely early cases of gastric cancer. In a small study group, to be reported later, changes in technic of collection of the gastric fluid have already resulted in a much higher proportion of positive smears. If a majority of early cases are found to be diagnosable by smear, the value of the cytologic method in the control of carcinoma of the stomach will be incontestable.

SUMMARY

The rationale, technic and accuracy of the cytologic method in the diagnosis of cancer is reviewed. It is shown that invisible lesions (cervix), noninvasive lesions (cervix) and tumors inaccessible for visualization or biopsy (lung, prostate) can be diagnosed by a study of exfoliated cells with an accuracy comparable to that of biopsy.

The likelihood of cancer in a patient with a positive smear is so high that this observation cannot be disregarded. A positive smear demands that every possible effort be made to establish the diagnosis. Radical therapy is justified, however, only if confirmatory evidence is obtained. A negative smear should never outweigh other evidence in favor of malignant disease.

While examination of fixed tissue sections remains the final criterion of malignant disease, evidence is presented that in the lung and cervix, and possibly in the stomach and prostate, cancer may be detected earlier by cytologic examination than is possible by any other means.

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39. Papanicolaou, G. N.: Diagnostic Value of Exfoliated Cells from Cancerous Tissues, J. A. M. A. 131: 372-378 (June 1) 1946.

40. Papanicolaou, G. N., and Cooper, W. A.: The Cytology of the Gastric Fluid in the Diagnosis of Carcinoma of the Stomach, J. Nat. Cancer Inst. 7: 357-360, 1947.

41. Hunter and Richardson (Cytologic Recognition of Cancer in Exfoliated Material from Various Sources [Useful Modifications of the Papanicolaou Technique], Surg., Gynec. & Obst. 85: 275-280, 1947) embedded and sectioned sediments of many body fluids. By their method a high degree of accuracy in the diagnosis of carcinoma of the stomach was obtained.

42. Graham, R. M.; Ulfelder, H., and Green, T. H., Jr.: The Cytologic Method as an Aid in the Diagnosis of Gastric Carcinoma, Surg., Gynec. & Obst. 86: 257-259, 1948.

DIGITOXIN

Its Evaluation for Initial Digitalization of the Patient with Congestive Heart Failure

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Several reports¹ have recently appeared concerning the value of digitoxin for the treatment of patients with congestive heart failure. It has been demonstrated^{1a} that the cat unit potency of digitoxin has no clinical relationship to that of digitalis leaf. It is essential, therefore, that extensive clinical studies be done to establish the proper dosage and the best methods of administration. Furthermore, since many glycosides are becoming available for clinical use, all should be thoroughly studied before any final decision is made concerning the selection of any particular glycoside as the one of choice. As part of our program, now in progress, for the evaluation of cardiac glycosides, digitoxin has been studied in several ways. Its use for the maintenance of the digitalized state in ambulatory patients has already been reported.² The purpose of the present report is to submit our experiences with digitoxin for the initial digitalization of the patient with congestive heart failure.

METHOD OF STUDY

Groups of patients with varying degrees of chronic congestive heart failure³ were given digitoxin⁴ according to one of the following oral methods: (1) a modified Eggleston method⁵ consisting of multiple doses, (2) a small daily undivided dose and (3) a single large dose as advocated by Gold and his co-workers.^{1cd} All patients were hospitalized and without exception were unselected except for the exclusion of patients with complications such as myocardial infarction, pulmonary disease and glomerulonephritis. None were moribund or considered too ill to be followed adequately after digitalization. With few exceptions, the patients had never previously been given any digitalis preparation, and the few exceptions had not received any for at least three weeks prior to digitalization. The fact that the majority of the patients were digitalized for the first time is considered to be important, since it has been our experience that many patients are more responsive to subsequent digitalizations. If a digitalis preparation is given again within a few weeks, the

patient who is being redigitalized may require a smaller dose to produce an adequate therapeutic response. All patients were at complete bed rest from the time of entering the hospital until the cardiac status allowed ambulatory care.

Before digitalization the maximum effect of the usual supportive measures was evaluated in each case. The duration of the control period varied from patient to patient depending on the severity of the heart disease and need for digitalization. Unless the patient's condition did not permit, the patient was observed usually for four to five days, and in some cases as long as two weeks before digitoxin was administered. None of the patients received any mercurial diuretic prior to digitalization. In general, the patients were observed according to the regimen established in previous studies.⁶

DIGITALIZATION BY THE MULTIPLE DOSE METHOD

Thirty-seven patients were given digitoxin according to a multiple dose schedule; i.e., they received an initial large dose, and subsequently at six hour intervals a smaller dose was administered until a definitely sustained therapeutic effect occurred or toxicity was noted. It should be made clear that the usual treatment of a patient with congestive heart failure does not require administration of digitoxin or any digitalis preparation to the point of toxicity. Once a sustained therapeutic effect is achieved a maintenance dose is advocated. However, in order to determine the therapeutic range, all patients were given digitoxin to the point of toxicity, the drug's administration being stopped at the first sign or symptom of its occurrence. The initial dose varied between 0.4 and 1.6 mg., with the greatest number of patients receiving 0.6 mg. Subsequent doses varied between 0.2 and 0.4 mg., with the greatest number of patients receiving 0.3 mg.

The therapeutic dose was ascertained in 27 of the patients and ranged between 0.9 and 4.8 mg., averaging 2.2 mg. In the other 10 patients, the therapeutic dose could not be established either because the minimal degree of congestive heart failure did not allow clearcut clinical evidence of improvement or because it was overshadowed by toxic manifestations. Most of the patients had initiation of improvement within twenty-four hours, but a satisfactory therapeutic effect was not achieved until at least forty-eight hours of digitalization. For each patient there was an optimum therapeutic dose which varied greatly from patient to patient. The size of the initial and subsequent doses did not seem to be material as long as the patient received sufficient digitoxin to be fully digitalized in the period of twenty-four to forty-eight hours. The best dosage scheme was found to be an initial dose of 0.6 mg. and then 0.3 mg. every six hours until the desired therapeutic effect was obtained.

The toxic dose ranged between 1.5 and 9.3 mg. (average 4.1 mg.). The type of toxicity was in no way different from that usually seen with the whole leaf of Digitalis purpurea. Anorexia, nausea and vomiting were commonly the earliest symptoms, but there was no way of predicting which patient would experience the more serious forms of toxicity such as abnormal rhythms and heart block, either concomitant with the mild symptoms or independently. This did not differ in any

From the Department of Therapeutics, New York University College of Medicine and the Third (New York University) Medical Division of Bellevue Hospital.

1. (a) Gold, H., Kwit, N. T., and Cattell, M.: Studies on Purified Digitalis Glycosides: I. Potency and Dosage of "Digitaline Nativelle" by Oral Administration in Man, *J. Pharmacol. & Exper. Therap.* **69**: 177 (July) 1940. (b) Gold, H.: Digitalis: Its Action and Usage, M. Ann. District of Columbia **10**: 127 (April) 1941. (c) Gold, H.; Kwit, N. T.; Cattell, M., and Travell, J.: Studies on Purified Digitalis Glycosides: IV. The Single Dose Method of Digitalization, *J. A. M. A.* **119**: 928 (July 18) 1942. (d) Gold, H.; Cattell, M.; Modell, W.; Kwit, N. T.; Kramer, M. L., and Zahm, W.: Clinical Studies on Digitoxin (Digitaline Nativelle) with Further Observations on Its Use in the Single Average Full Dose Method of Digitalization, *J. Pharmacol. & Exper. Therap.* **32**: 187 (Oct.) 1944. (e) Katz, L. N., and Wise, W.: Oral Single-Dose Digitalization with Digitalis Leaf and Digitaline "Nativelle," *Am. Heart J.* **30**: 125 (Aug.) 1945. (f) Digitalis Versus Digitoxin, *Conferences on Therapy, New York State J. Med.* **45**: 1676 (Aug. 1) 1945.

2. Batterman, R. C., and DeGraff, A. C.: A Study on the Use of the Purified Digitalis Glycoside and Lanatoside C for the Management of Congestive Heart Failure, *Am. Heart J.* **34**:

3. Nomenclature and Criteria of Diseases of the Heart, Criteria Committee, New York Heart Association, ed. 4, New York, New York Tuberculosis & Health Association, 1939.

4. The digitoxin used was "digitaline nativelle," available in tablets of 0.1 and 0.2 mg. A generous amount of the glycoside was supplied by the Varick Pharmaceutical Company, Inc.

5. Eggleston, C.: Digitalis Dosage, *Arch. Int. Med.* **16**: 1 (July) 1915.

6. (a) Batterman, R. C.; Rose, O. A., and DeGraff, A. C.: The Combined Use of Ouabain and Digitalis in the Treatment of Congestive Heart Failure, *Am. Heart J.* **20**: 443 (Oct.) 1940. (b) Batterman, R. C.; Holman, D. V., and DeGraff, A. C.: The Therapeutic Effectiveness and Potency of Digilandin in the Treatment of Congestive Heart Failure, *Ann. Int. Med.* **14**: 2058 (May) 1941. (c) Rose, O. A.; Batterman, R. C., and DeGraff, A. C.: Clinical Studies on Digoxin: A Purified Digitalis Glycoside, *Am. Heart J.* **24**: 435 (Oct.) 1942.

respect from the toxicity noted with any digitalis preparation. However, the striking observation was the persistence of toxicity. In several patients toxicity persisted for many days, although the mild toxic symptoms usually subsided within forty-eight to seventy-two hours.

SLOW DIGITALIZATION WITH DAILY SINGLE DOSES

Twelve patients who were not acutely ill, so that slow digitalization could be followed without fear of jeopardizing the patient's welfare, were included in this group. The daily dose in all but 2 instances was 0.4 mg. This dose was selected because studies in the ambulatory patient² indicated that it is the minimal dose which would allow sufficient cumulation for relatively rapid therapeutic response and yet would be sufficiently high to result eventually in minimal toxicity. Digitalization was achieved in 9 of the 12 patients. A therapeutic response was not discernible in 3 patients, 2 of whom had only a questionable amount of congestive heart failure. The desired therapeutic response was noted in three to six days and required from 0.9 to 2.4 mg. (average 1.7 mg.). This dose is slightly lower than that noted for the multiple dose method, but the two groups are not comparable in terms of severity of congestive heart failure. Since the patients in this group were definitely in less congestive heart failure it is probable that they would require a smaller dose. That this is the most likely explanation can be reasoned from the fact that the average of the therapeutic doses obtained by the multiple dose method in 10 patients with comparable degrees of congestive heart failure is 1.6 mg. This fact again indicates that the patient responds only when an optimum dose level is reached regardless of the size of the initial dose, the subsequent doses and the time interval between doses (six to twenty-four hours). Our evidence favors the slow rate of dissipation of digitoxin; otherwise it would be expected that the daily undivided dose method would require a larger average dose than the rapid type of digitalization.

The toxic dose was obtained in 11 of the 12 patients. One patient was able to tolerate 0.3 mg. for twenty-five daily doses without toxicity. Toxicity was noted in four to twenty days with a dose range of 1.6 to 8 mg. (average 3.8 mg.) and was similar to that noted from the multiple dose method.

SINGLE DOSE METHOD

Gold and his associates^{1c} introduced the single dose method for digitoxin and advocated a dose of 1.2 mg. followed in twenty-four hours by a maintenance dose for all patients regardless of age, weight, sex or degree of heart failure. It was deemed advisable, therefore, to include this method in this study. Eighteen patients with chronic auricular fibrillation in various degrees of congestive heart failure were given a single dose of 1.2 mg. of digitoxin and observed for twenty-four hours to note any signs of clinical improvement. With the exception of 1 patient, who was in severe congestive heart failure, all patients were previously observed for several days to eliminate the possibility of spontaneous clinical improvement with bed rest alone. The data on these patients are summarized in the table.

Adequate digitalization was obtained in only 3 patients (17 per cent). Two of these were in mild failure. Eight patients (44 per cent) showed slight evidence of digitalization as indicated by slowing of the ventricular rate and diuresis, but this response was inadequate for satisfactory clinical improvement. None of these patients would have been considered to be fully digitalized. Seven patients (39 per cent) did not pre-

sent any clinical effects from the single dose of digitoxin. One patient subsequently died before sufficient digitoxin could be administered, while in another patient an additional 2.1 mg. in divided doses was also insufficient, although a complicating acute pulmonary disease occurring subsequent to initial digitalization may have been the responsible factor for death.

Since the claim⁷ is made that "full digitalization" is possible with the single dose, an effort was made to determine the exact level of digitalization attained. The patient was "titrated" by administering a small dose of digitoxin at six hour intervals, twenty-four hours after the initial dose, until a satisfactory therapeutic response was obtained, and then continuing until minor signs of toxicity occurred. Eleven patients required 0.4 to 3.3 mg. (average 1.6 mg.) more than the initial 1.2 mg. to achieve a good therapeutic effect. The therapeutic dose in these patients ranged between 1.6 to 4.5 mg., averaging 2.7 mg. If the three patients who responded to 1.2 mg. are included the average therapeutic dose becomes 2.2 mg. An additional 0.9 to 6.9 mg. (average 3.8 mg.) was required to achieve toxicity. The toxic dose varied between 2.1 and 7.1 mg., averaging 4.6 mg.

COMMENT

The response of a patient to an optimum dose of any digitalis preparation depends on several factors, the most important of which are (1) the degree of congestive heart failure, (2) the theoretical maximum improvement possible with the underlying heart disease and (3) the precipitating cause of the congestive heart failure. This optimum dose is specific for each patient and it cannot be predicted. It also varies in the same patient from time to time as conditions change. The administration of an average dose for the treatment of any individual patient is not in the best interest of the patient because of the possibility that such treatment may result in incomplete digitalization or toxicity. The so-called average dose is selected because of the low incidence of toxic manifestations which it may produce. The possibility of toxicity following the administration of such an "average" dose is, therefore, not great. However, toxicity may occur and in the rare hypersensitive patient this may be serious. The primary object in adequate digitalization is to restore cardiac efficiency as quickly as possible. The "average" dose may act as a rough guide for digitalization, but it should not be relied on to digitalize completely any individual patient. This holds true particularly for the single dose method of digitalization with digitoxin. Only 3 of our 18 patients had a satisfactory therapeutic response with this method. It was subsequently necessary in 11 of the patients to administer an additional 33 to 275 per cent (average 133 per cent) of the original dose to obtain a therapeutic digitalis effect. In view of our experiences with the multiple and daily undivided dose methods, this was to be expected. The administration of a large initial dose has only the advantage that the total optimum therapeutic dose may be obtained a few hours sooner. If the optimum dose is exceeded but is still short of a toxic dose, digitoxin will not produce any earlier or greater response than would be produced by the optimum dose itself. It is important, however, to recognize that no satisfactory therapeutic response will be noted until the optimum dose for the individual patient is reached. This point should be arrived at as cautiously as possible because toxicity with digitoxin

7. Gold,^{1b} Gold and others.^{1c, d}

Digitalization of Hospitalized Patients with a Single Dose of 1.2 Mg. of Digitoxin Orally

Patient Age	Diagnosis*		Physiologic†	Degree of Congestive Heart Failure‡	Weight in Pounds	V.R.‡ Before Treatment	Effect	V.R. 24 Hr. After Single Dose 1.2 Mg. Digitoxin Orally	Dose of Digitoxin in Mg. Administered Every 6 Hours	Additional Doses of Digitoxin Required for Satisfactory Therapeutic Effect	Additional Mg. of Digitoxin Required for Satisfactory Therapeutic Effect	Total Dose in Mg. Required for Satisfactory Therapeutic Effect	Additional Mg. of Digitoxin Required for Toxicity	Total Dose in Mg. Required for Toxicity	Comments
	Etiologic	Anatomic													
1 63	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	152	130-152	Slight diuresis with loss of 3½ pounds of edema fluid	116-120	0.3	4	1.2	2.4	5.2	6.4	
2 60	Hypertension, rheumatic fever (inactive)	Enlarged heart, mitral stenosis, mitral insufficiency	AF	+++	183	136-140	Diuresis with loss of 5 pounds of edema fluid	117	0.3	4	1.2	2.4	3.0	4.2	V.R. not controlled until 2.4 mg.; satisfactory diuresis not obtained until 3.3 mg. were administered
3 64	Hypertension, arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	++	129	130-110	None noted	150	0.3	3	0.9	2.1	0.9	2.1	No therapeutic response was noted until patient was toxic
4 52	Hypertension, arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	143	128-140	None noted	108+	0.3	6	1.8	3.0	3.3	4.5	Six hours after initial dose, patient required aminophylline parenterally, mercupurin and sedation for relief
5 61	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+	144	130-170	Relief of dyspnea and orthopnea; no diuresis	82-108	0.3	11	3.3	4.5	5.7	6.9	Diuresis and control of V.R. occurred only after 3 days of continuous therapy
6 38	Rheumatic fever (inactive)	Enlarged heart, mitral stenosis, mitral insufficiency	AF	+	170	130	Control of V.R.	84	0.3	—	—	1.2	1.2	2.4	
7 67	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	++	111	114-126	None noted	114	0.3	4	1.2	2.4	2.4	3.6	
8 67	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+	180	96-121	Slight slowing of V.R.	90	0.3	5	1.5	2.7	5.4	6.6	
9 60	Hypertension, arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	169	96-108	Diuresis of 4 pounds and control of V.R.	80	0.3	—	—	1.2	4.5	5.7	
10 55	Hypertension	Enlarged heart	AF	+++	188	132-156	Slight slowing of V.R.	118	0.3	2	0.6	1.8	3.0	5.1	Diuresis and control of V.R. did not occur until 1.8 mg. was given
11 85	Hypertension, arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	—	120-136	Slight slowing of V.R.	100	0.3	10	3.0	4.2	6.9	7.1	Patient had massive anasarca. V.R. was not controlled until 4.2 mg. of digitoxin was given
12 63	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	150	106-140	None noted	108							Required mercurial diuretic 24 hours after single dose to obtain relief
13 75	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	++	179	100-116	Slight slowing of V.R.	90	0.3	4	1.2	2.4	6.3+	7.5+	Toxic dose not obtained since patient requested discharge from hospital
14 84	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+	106	100	V.R. controlled; no clinical im- provement	84	0.2	2	0.4	1.6			Patient received an additional 1.6 mg. without toxicity
15 65	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	202	160	No clinical im- provement	120							Patient died on second day before sufficient digitoxin could be administered; had received additional 0.6 mg.
16 65	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+	104	144	No clinical im- provement	128	0.3						No therapeutic response noted after additional 2.1 mg.; patient died, with acute pulmonary disease 4 days after initiating therapy
17 66	Hypertension, arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+	145	126-147	V.R. controlled and diuresis	86			1.2				
18 50	Arteriosclerosis	Enlarged heart, myocardial fibrosis, coronary sclerosis	AF	+++	172		None noted	152	0.2			1.2	2.4		

*According to the Nomenclature and Criteria for Diagnosis of Diseases of the Heart, Ed. 4, 1939, New York Heart Association.

†Ascertained by general appearance of patient and clinical response during a preliminary period of control.

‡Ventricular rate.

§Auricular fibrillation.

may be severe and it may persist for many days. It is for these reasons that we recommend the multiple dose method.

Our results and conclusions are at variance with those reported by Gold and his associates⁸ and more recently by Katz and Wise¹⁰ but are in accord with the experiences of Stewart.⁹ Reasons for this variance are not at once apparent, but they may be related to the selection of patients included for study. The original group of patients used by Gold and his co-workers¹² consisted of 14 subjects with regular sinus rhythm and 16 subjects with auricular fibrillation. The dose was determined by comparing the alterations of the S-T segment and T waves in the electrocardiogram produced by digitoxin and digitalis leaf in patients with regular sinus rhythm, while the ventricular rate was followed in the patients with auricular fibrillation. The two methods yielded similar results. The conclusion was reached that "the full digitalizing dose (to a point bordering on minor toxic effects) given at one time lies, in the average adult between 1 and 1.25 mg. or 2.4 to 3 cat units." However, only 2 of the patients with regular sinus rhythm and 8 of the patients with auricular fibrillation were in congestive heart failure, and in these the degree of failure was not mentioned. This may have been responsible for the low dose of digitoxin reported. The use of the electrocardiogram as a means of gaging the effective dose of digitalis is open to several objections. First, the changes in the S-T segment and T wave are merely manifestations of digitalis action which usually occur simultaneously with other effects of digitalis such as slowing of the ventricular rate or improvement in muscular efficiency. The occurrence of any one of these effects may be independent of the others, so that a patient may have satisfactory clinical improvement without electrocardiographic changes. Similarly, electrocardiographic changes may be observed without concomitant clinical improvement. That the majority of patients will have the electrocardiographic changes occurring in proportion to the dose administered may be true for digitoxin and digitalis leaf, but there is no such correlation when other glycosides such as digoxin and lanatoside C¹⁰ are used. A similar degree of improvement of cardiac status and maintenance could be achieved with either of these glycosides, even though electrocardiographic changes are not as great as when digitoxin or digitalis leaf are used. Second, as a guide for digitalization, the changes in the electrocardiogram cannot replace the need for establishing the dose clinically in patients. This fact has also been noted by Gold⁹ who has stated that "It takes about three times as much digitalis to bring about the full therapeutic effects in heart failure as to produce changes in the T wave, and there are some patients who show negligible changes in the T wave with doses of the drug sufficient to control heart failure, while others may show advanced T wave changes with doses of the drug which cause negligible effects in heart failure." Since the frequency distribution curve¹¹ obtained with the effect of digitalis on the T wave would suggest 1.2 mg. of digitoxin as the "average dose," according to the foregoing statement this dose is approximately one third that required for full therapeutic effects. This more closely approximates the figure obtained by us. Nevertheless, the same investigators continue to claim⁹ that 1.2 mg. is the "average full digitalizing dose."

Gold and his associates¹⁰ treated 213 patients with varying degrees of heart failure including patients with auricular fibrillation and regular sinus rhythm. However, it is not clear whether these patients were being treated for the first time or were being redigitalized. In view of the statement "they had been without digitalis for at least three weeks" it would appear that the latter was most likely. It has been our experience that such patients often require a much smaller dose of a digitalis preparation to obtain adequate digitalization. The same holds true for the report by Katz and Wise.¹⁰ Not only was their study performed on previously digitalized patients, but only 5 of their 15 patients presented any congestive heart failure. Furthermore, since their patients were kept at complete bed rest only on the day of digitalization, they did not exclude the possibility of response to bed rest alone.

The doses of digitoxin advocated by Gold and his associates for both initial digitalization and maintenance are not in accord with clinical experiences for the treatment of congestive heart failure. It is well known that a definite correlation exists between the dose required for initial digitalization and the dose required for maintenance. As a rule the larger the initial dose, the larger the maintenance dose; yet 1.2 mg. of digitoxin, which is relatively a small dose, is advocated for initial digitalization, while 0.2 mg., a high dose, is recommended for maintenance. Perhaps this relatively high daily dose is required to supplement the therapeutic effects initiated with the single dose of 1.2 mg. and what is observed is not maintenance but cumulative digitalization. Since between 50 and 60 per cent of patients² can be maintained without toxicity on this high daily dose of digitoxin, it might have been assumed that this dose is a satisfactory maintenance dose. However, it is usually twice the minimal maintenance dose and approximately 30 per cent of patients² taking this dose for ten to twelve weeks will manifest signs and symptoms of toxicity.

We must disagree with the statement¹² that the incidence of toxic effects when the single dose is given to a large number of patients is more important than the incidence of satisfactory digitalization. It is always possible to determine the largest single dose which will result in the smallest incidence of toxicity, but unless that dose results in satisfactory digitalization, all that has been accomplished is that a safe dose has been determined. An "average" dose may aid in achieving the optimum therapeutic dose, but it can not be relied on to produce adequate digitalization.

It has been frequently emphasized that the so-called single digitalizing dose of digitoxin produces less local gastrointestinal irritation than an equivalent amount of digitalis leaf. However, this is the case only when one compares the administration of a single large dose of digitoxin with an equivalent dose of digitalis leaf. The assumption is made that if digitalis leaf were not so irritating, a single large dose of the leaf would be preferable for digitalization. However, sufficient clinical experience with digitalis leaf has favored the administration of small multiple doses.⁶ The object of this method is to have a better control of dosage and to assure a more effective and safe digitalization rather than to avoid local gastrointestinal symptoms. With usual doses of digitalis leaf, the factor of gastrointestinal irritation is negligible.

We believe that the factor of absorbability from the gastrointestinal tract is also being overemphasized. It is desirable to know that a particular glycoside is ab-

8. Gold and others.^{10,11} Footnote 11.

9. The Dose of a Drug, Conferences on Therapy, Am. J. Med. 2:296 (March) 1947.

10. Studies still in progress.

sorbed in sufficient amounts to exert a therapeutic effect and whether this effect can be achieved with a fair degree of dependability with a prescribed dose. However, it seems to us that this is of major consideration in the establishment of a maintenance dose but is not so significant in initial digitalization. The individual patient is given a digitalis preparation at regular intervals until a desired therapeutic effect is achieved or toxicity results. As long as absorption occurs and the intervals are so spaced that the rate of dissipation is not too rapid, sufficient cumulation will occur. A more completely absorbed preparation does not result in any faster digitalization unless that particular glycoside has a short latent period of action. This is not so with digitoxin. Clinically the time taken for digitalization orally with digitoxin is no shorter than that observed by the oral route with digitalis leaf, digoxin and other glycosides. On the other hand, variability in absorption may play a role in establishment of the maintenance dose.² The method of comparing the effects of a single intravenous dose of a glycoside with a single oral dose as a guide to completeness of absorption must take into consideration the following factors:

1. A determination of the minimum optimum therapeutic dose for each method of administration. This is important because, as stated before, considerably more of a digitalis preparation can be given beyond the optimum dose with the same therapeutic effect. We have found no evidence in the literature that such a comparison has ever been made with digitoxin. Thus the results of giving a single dose of 1.25 mg. of digitoxin orally and parenterally may be identical. It has not been demonstrated, however, that the patient would not respond to an equivalent degree to a smaller dose given parenterally. Within certain limits the results would be identical because the patient would respond to a dose as long as it is optimum or above. If absorption is identical as determined by effects, then the toxic dose should also be identical. Whereas 2 mg. of digitoxin orally results in minor toxicity in 32 per cent^{1a} of cases, there is good reason to believe that the incidence and severity of the toxicity with this dose would be considerably higher by the intravenous route.

2. The latent period and rate of dissipation. A rapidly acting glycoside like digoxin will produce its effects within a few minutes if the concentration reaching the heart muscle is within optimum limits. However, if the drug is rapidly dissipated, the slower rate of absorption from the gastrointestinal tract does not allow sufficient cumulation with a single dose to attain the same level of concentration at the heart muscle to give at any instant of time an effect comparable to the intravenous route. The drug may be completely absorbed, but this is overshadowed by its rate of dissipation. Digitoxin, on the other hand, is so slowly dissipated that an oral dose will attain an effective concentration comparable to that achieved with the same parenteral dose. With slowly dissipated glycosides which possess comparatively long latent periods of action, a sufficient concentration may be eventually reached to produce the same effect as the parenteral dose. With the more rapidly dissipated glycosides such as digoxin and lanatoside C, which possess a comparatively short latent period, a single dose will produce a strong effect almost immediately on intravenous administration, but when the same dose is given orally a similar effect can never be reached.

Digitoxin when used properly fulfils the criteria for a satisfactory preparation of digitalis. However,

one must be extremely cautious in its use because of the possibility of toxicity which on the basis of an extremely slow rate of dissipation may be serious and prolonged.

From our studies, digitoxin offers no particular advantage over digitalis leaf for the usual treatment of a patient with congestive heart failure.

The disadvantages in the use of digitoxin as discussed in this paper and our clinical studies with this and other purified digitalis glycosides² lead us to conclude that digitoxin is not the one of choice.

SUMMARY AND CONCLUSIONS

Three methods for the oral administration of digitoxin for the initial digitalization of the patient with congestive heart failure are compared. Regardless of the method used, an optimum dose is required for any specific patient before a therapeutic response is attained.

The average therapeutic dose for the multiple dose method was found to be 2.2 mg. as compared with 1.7 mg. for the single undivided daily dose and 2.7 mg. for the single large dose with supplementary administration of digitoxin.

The average toxic dose for the multiple dose method was found to be 4.1 mg. as compared with 3.8 mg. for the single undivided daily dose and 4.6 mg. for the single large dose with supplementary digitoxin administration.

"Full digitalization" was not considered to have been adequately obtained with the single large dose of 1.2 mg. of digitoxin since a satisfactory digitalization was obtained in only 17 per cent of the patients and 0.4 to 3.3 mg. (average 1.6 mg.) additional digitoxin had to be administered before the optimal therapeutic response was reached.

Reasons are presented for selection of the multiple dose method as the one of choice for administering digitoxin.

Digitoxin offers no particular advantage over digitalis leaf for the routine treatment of the patient with congestive heart failure. Because of its slow dissipation and the possibility of prolonged and severe toxicity, digitoxin is not in our opinion the glycoside of choice.

Retinitis Pigmentosa.—One of the common causes of blindness is retinitis pigmentosa. Ten years ago it could be said that in some pedigrees this disease was transmitted as a dominant, in others as a recessive of the ordinary type, occasionally as a sex-linked recessive. In 1936 I argued that some pedigrees showed partial sex-linkage . . . We can now say tentatively that one of the genes, the abnormality of which causes this condition, is carried in that segment of the sex chromosomes of which women possess two, and men only one; another, which may give dominant or recessive mutants, in that segment of the same chromosomes of which both sexes possess two; while other such genes, how many we do not know, are carried in the other chromosomes. It is reasonably sure that they control different processes. And this is borne out by the fact that the partially sex-linked recessive type is never associated with deafness, while one of the autosomal recessives is so associated.

Pathologists will have to work out the aetiology of the different genetical types. They can hardly hope to do so until they are distinguished, if, as seems probable, each gene controls a different process. And just as the methods for the cure of bacillary and amoebic dysentery are very different, so it is unlikely that the same therapeutic measures will succeed against diseases, however similar in their symptoms, which are due to different genes.—Haldane, J. B. S., *Proceedings of The Royal Society*, June 1948.

JARISCH-HERXHEIMER REACTION IN EARLY SYPHILIS

Treated with Crystalline Penicillin G

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The transient intensification of the symptoms and signs of early syphilis shortly after the institution of treatment (the Jarisch-Herxheimer reaction) has been repeatedly observed after the administration of mercury, bismuth and arsenical drugs. In 1943 Mahoney, Arnold, and Harris¹ first described the same febrile and cutaneous reactions in patients with early syphilis within eight hours after the initial injection of commercial penicillin. Subsequently a number of observations concerning the various manifestations, the specificity, the incidence and the severity of this reaction in early syphilis treated with commercial penicillin were reported. No attempt is made here to compare the frequency and severity of Herxheimer reactions after the administration of bismuth and arsenical preparations with those occurring after administration of penicillin.

Between July 1946 and June 1947 a large group of patients with early infectious syphilis were treated with crystalline penicillin G in twenty cooperating clinics, including the Johns Hopkins Hospital, under the direction of the Syphilis Study Section of the United States Public Health Service. From case reports sent to the Central Statistical Unit by those clinics the incidence of this reaction was determined. A group of patients with relapsing early syphilis was studied at the Johns Hopkins Hospital to clarify the possible prognostic value of this reaction. The relationship of the reaction to the dosage of crystalline penicillin G was determined in order to evaluate the possible benefit to be derived from small initial doses of penicillin, which have frequently been given in an effort to prevent the reaction. The relationship of penicillin dosage to febrile reactions and also to the disappearance time of *Treponema pallidum* was studied with the hope of obtaining further information concerning the theoretic nature of the Herxheimer reaction.

MANIFESTATIONS

The usual symptoms and signs of the Herxheimer reaction in early syphilis include any one or combination of the following observations:

1. Systemic or febrile phase of the reaction: chilliness, elevation of temperature, malaise, headache and nausea.
2. Focal or cutaneous phase of the reaction: edema or pain in the primary ulcer, enlargement of, or pain in, the regional lymph nodes, intensification of a secondary eruption or of other local lesions or the development of generalized roseola in primary syphilis. All of these signs and symptoms occur between four and forty-eight hours after the initial injection of penicillin. Therefore, the Herxheimer reaction may be classified as one of the "immediate reactions" to penicillin, in contrast with "delayed reactions."

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1. Mahoney, J. F.; Arnold, R. C., and Harris, A.: Penicillin Treatment of Early Syphilis: A Preliminary Report, *Ven. Dis. Inform.* **24**: 355-357 (Dec.) 1943; *Am. J. Pub. Health* **33**: 1387-1391 (Dec.) 1943.

The manifestations of the reaction vary. One patient with primary syphilis may have a generalized macular eruption and no fever; another may have fever with no focal signs; a third may have an elevation of temperature with no subjective symptoms. Of the various forms of the reaction the elevation of temperature may be measured most accurately.

In addition to these frequent manifestations of the Herxheimer phenomenon, focal reactions of the cornea have been described during penicillin therapy in syphilitic uveitis.² Intensification of the inflammatory reaction in papular lesions of the cornea in patients with secondary syphilis was observed under the corneal microscope. This increase in the number of inflammatory cells associated with haziness and corneal precipitates was described as a part of the "histologic phase" of the Herxheimer reaction. Similar studies of the cutaneous lesions of secondary syphilis by the microscopic examination in repeated biopsies have revealed an increased inflammatory reaction in four to six hours after the administration of penicillin.³

The Herxheimer reaction has been observed after intramuscular,⁴ intravenous⁵ and oral⁶ administration of penicillin in early syphilis. It has been noted following the use of peanut oil and wax suspensions⁷ and of aqueous solutions of penicillin.

Scott and Clark⁸ have reported the development of a transient nephrotic syndrome in a patient with early syphilis treated with penicillin, which they considered an unusual manifestation of a Herxheimer reaction. There is little evidence presented for this assumption, since the complication developed on the thirteenth day after the first injection of penicillin and on the fifth day after the completion of treatment. This represents a "delayed reaction."

SPECIFICITY

An evaluation of the specificity of the Herxheimer reaction in response to penicillin in early syphilis depends on accurate data concerning the incidence of febrile and cutaneous reactions following the administration of penicillin in other diseases.

In the treatment of primary and secondary yaws with penicillin, both febrile and cutaneous reactions have been reported.⁹ Temperatures of 100 to 104 F (37.8 to 40 C.) occurred in one half of 200 patients from two to eight hours after penicillin therapy was started. Thus, the Herxheimer reaction has been observed in this closely related spirochetal disease.

Herxheimer reactions have not been reported in a wide variety of acute generalized infections treated with penicillin. Since most of the patients in these

2. Klander, J. V., and Dublin, G. J.: Syphilitic Uveitis: Diagnosis, Herxheimer Reaction and Results of Various Treatments, Including Penicillin Therapy, *Arch. Ophthalmol.* **35**: 384-399 (April) 1946.

3. Heyman, A.: Personal communication to the author.

4. (a) Mahoney, Arnold and Harris: The Treatment of Early Syphilis with Penicillin. (b) Committee on Medical Research and the United States Public Health Service, *J. A. M. A.* **131**: 265-271 (May 25) 1946. (c) Pillsbury, D.: Penicillin Therapy of Early Syphilis in fourteen thousand patients: Follow-Up Examination of seven hundred and ninety-two Patients Six or More Months After Treatment, *Am. J. Syph., Gonorr. & Ven. Dis.* **30**: 135-143 (March) 1946. (d) Moore, J. E.: Penicillin in Syphilis, Springfield, Ill., Charles C Thomas, Publisher.

5. Unpublished data.

6. Paul, W. D.; Rhomberg, C., and Wallace, E.: Penicillin by Mouth in Combination with Aluminum Dihydroxyacetate, *J. Indiana M. A.* **38**: 298-301 (Sept.) 1945.

7. Romansky, M. J., and Rein, C. R.: Treatment of Early Syphilis with Calcium Penicillin-Oil-Deeswax, *J. A. M. A.* **132**: 847-851 (Dec. 7) 1946.

8. Scott, V., and Clark, E. G.: Syphilitic Nephrosis as a Manifestation of a Renal Herxheimer Reaction Following Penicillin Therapy for Early Syphilis: A Case Report, *Am. J. Syph., Gonorr. & Ven. Dis.* **30**: 463-467 (Sept.) 1946.

9. Dwindelle, J. H.; Rein, C. R.; Sternberg, T. H., and Sheldon, A. J.: Preliminary Report on the Evaluation of Penicillin in the Treatment of Yaws, *Am. J. Trop. Med.* **20**: 311-318 (May) 1946. Lofgren, R. C.: Yaws Treated with Penicillin: Report of a Case, *U. S. Nav. M. Bull.* **43**: 1025-1030 (Nov.) 1944.

groups were already febrile, it was difficult to exclude the possible occurrence of secondary fever superimposed on an underlying febrile course. However, febrile reactions to penicillin among an analogous small group of cases of secondary syphilis with fever have been observed.⁵ In such cases, this reaction could be clearly delineated only when there was a maximal febrile response.

Patients with uncomplicated gonorrhea represent a satisfactory control group for the observation of possible febrile reactions to penicillin therapy, since these patients are usually afebrile. In a report¹⁰ of the results of the treatment with penicillin of 675 hospitalized women with gonorrhea, a mild rise in temperature during treatment was noted in only 2 patients, and both of these women had concomitant early syphilis. The frequency of observations of temperature in this group of cases was not stated. Thus, although adequate control groups are not available, it is said that early febrile reactions to the administration of penicillin to patients with nonsyphilitic infections are rare, if not nonexistent. The point requires further investigation.

In contrast with the apparent specificity of the febrile type of response, immediate cutaneous reactions to the administration of penicillin have been observed in patients with nonsyphilitic infections. Focal and generalized cutaneous reactions, occurring between ten and twenty hours after the injection of penicillin, have been noted in 18 (25 per cent) of 73 patients with various types of dermatitis (eczematoid dermatitis, atypical lichen planus and undifferentiated dermatitis).¹¹ Two types of reaction occurred, either a local exacerbation of the cutaneous condition, with hyperemia, pruritus and exudation of serum, or a generalized erythematous eruption. It was suggested by the authors, on the basis of results of cutaneous tests with penicillin and trichophytin antigen, that these reactions might be due to sensitization from a past or present fungous infection. Similar reactions in lesions of fungous origin have been described after the administration of penicillin.¹² The same increased inflammatory reactions which have been reported in syphilitic uveitis were also noted in 25 per cent of 36 patients with nonsyphilitic uveitis following the institution of penicillin therapy.² Thus, focal reactions to the administration of penicillin do occur in nonsyphilitic patients, and these might be clinically indistinguishable from the focal Herxheimer reactions in early syphilis.

RESULTS

Incidence.—With commercial penicillin, febrile reactions have been observed in 30 to 70 per cent of adults with early syphilis,¹³⁻¹⁵ and in 43 to 55 per cent of infants with congenital syphilis.¹³ The incidence of cutaneous reactions has not been accurately determined. Although the phenomenon has been reported to the Central Statistical Unit by the cooperating clinics in from 2 to 10 per cent of cases, this certainly is an underestimate of the true incidence of focal reactions. The "histologic phase" of the reaction has been observed in 70 per cent of patients with syphilitic uveitis.²

The incidence of febrile reactions following the administration of crystalline penicillin G¹⁴ was studied among a group of 939 patients with early infectious syphilis treated in twenty cooperating clinics. These patients were treated with initial doses of 25,000 to 50,000 Oxford units and with total doses of 2,400,000 to 4,800,000 Oxford units of penicillin administered intramuscularly. Temperatures were recorded every four hours.

TABLE 1.—*Relationship of the Incidence of Febrile Reactions to the Race and Sex of Patients with Early Syphilis Following Treatment with Crystalline Penicillin G*

Race	Total No. Treated	No. with Febrile Reactions	Percentage with Febrile Reactions
White	180	85	46
Negro	753	299	40
Total	939	384	41
Sex			
Male	498	207	42
Female	441	177	40
Total	939	384	41

Of this group, 384 (41 per cent) had febrile reactions (table 1). No significant race or sex differences in the incidence and severity of febrile reactions were demonstrated (table 1).

Relationship to the Stage of Early Syphilis.—Febrile reactions have been reported to occur when penicillin is administered during the incubation period of syphilis. Two patients¹⁵ have been observed in whom elevations of temperature were recorded during penicillin therapy for uncomplicated gonorrhea. At the time of treatment, their reactions to serologic tests for syphilis were negative. Secondary syphilis developed in these patients on the twenty-fifth and thirty-fifth days after penicillin therapy. Similar observations¹⁶ concerning the possible occurrence of the Herxheimer reaction during the incubation period of syphilis have been reported of 66 patients with early syphilis who gave a history of gonorrhea treated with penicillin during the possible incubation period of syphilis. Of these 66 patients, 18 gave a history of fever or chilly sensations accompanying penicillin therapy for gonorrhea. Thus, there is presumptive evidence that Herxheimer reactions to penicillin do occur during the incubation period of syphilis. However, it is not known how early in the incubation period such reactions occur nor how frequently they develop.

The relationship of the incidence and severity of febrile reactions to the stage of early syphilis among 800 patients treated with crystalline penicillin G is shown in table 2. Febrile reactions were observed with equal frequency and severity in patients with seronegative primary, seropositive primary and secondary syphilis. The incidence of this phenomenon was 39 to 43 per cent in these three groups of cases. The height of the febrile response was just as great in the group of patients with seronegative primary syphilis as it

10. Thomas R. B., and Meyer, E.: Penicillin in the Treatment of Gonorrhea: Results with Six Hundred and Seventy Five Women, *J. Ven. Dis. Inform.* 26:94-98 (May) 1945.

11. Kolodny, M. H., and Denhoff, E.: Reactions in Penicillin Therapy, *J. A. M. A.* 130:1058-1061 (April 20) 1946.

12. Lamb, J. H.: Allergic Reactions During the Administration of Penicillin, *Arch. Dermat. & Syph.* 52:93-95 (Aug.) 1945.

13. (a) Platou, R. V.; Hill, A. J., Jr.; Ingraham, N. R.; Goodwin, M. A.; Wilkinson, E. E.; and Hansen, A. E.: Effect of Penicillin in the Treatment of Infantile Congenital Syphilis: Further Observations, *Am. J. Dis. Child.* 72:635-648 (Dec.) 1946. (b) Heyman, A., and Yampolsky, J.: Treatment of Infantile Congenital Syphilis with Penicillin, *Am. J. Dis. Child.* 71:506-512 (May) 1946.

14. The crystalline penicillin G used in these studies was supplied by the Commercial Solvents Company, lot numbers 4604260, and 46082605 and potency 1500-1540 units per milligram.

15. (a) Atcheson, D. W.: Secondary Syphilis Following Penicillin Therapy of Gonorrhea, *Am. J. Syph., Gonorr. & Ven. Dis.* 29:423-425 (July) 1945. (b) Leiter, W., and Martin, S. P.: Effect of Penicillin in the Course of Early Syphilis, *J. A. M. A.* 130:202-205 (Jan.) 1946.

16. Fromer, S.; Cutler, J. C., and Levitan, S.: Masking of Early Syphilis by Penicillin Therapy in Gonorrhea, *J. Ven. Dis. Inform.* 27:174-177 (July) 1946.

was in the groups of patients with seropositive primary and secondary syphilis (table 2).

Relationship to Relapse.—The occurrence of Herxheimer reactions in relation to relapse was studied among 395 patients with early syphilis treated with commercial penicillin at the Johns Hopkins Hospital. In this group there were 56 cases of mucocutaneous relapse. Each of these patients with relapse had an initial early syphilitic infection followed by a relapse

TABLE 2.—*Relationship of the Incidence and Severity of Febrile Reactions to the Stage of Early Syphilis in Patients given Crystalline Penicillin G*

Type of Febrile Reaction	Sero-negative Primary Syphilis		Sero-positive Primary Syphilis		Secondary Syphilis		Total	
	Number Treated	Percentage	Number Treated	Percentage	Number Treated	Percentage	Number Treated	Percentage
Fever—All Grades	46	39	92	43	195	42	333	42
Grade I (0 to 1 F. rise)	23	19	36	17	113	24	172	22
Grade II (1 to 2 F. rise)	9	8	23	11	49	11	81	10
Grade III (2 to 7 F. rise)	14	12	33	15	33	7	80	10
No febrile Reaction	71	61	124	57	272	58	467	58
Total	117	100	216	100	467	100	807*	100

*Of the 939 patients presented in table 1, there was complete data concerning the stage of early syphilis for 800.

treated with a second course of penicillin. The total doses of penicillin varied from 600,000 to 4,800,000 Oxford units. Most of the medicaments given to this group consisted of many different lots of commercial penicillin from several manufacturers. A few of the patients with relapse were treated with crystalline penicillin G. Temperatures were recorded rectally every four hours, and a temperature above 100 F. (37.8 C.) was considered to represent a febrile reaction.

In the 395 patients, 188, or 48 per cent, had Herxheimer reactions. Among those 188 patients with febrile reactions, relapsing infections occurred in 28, or 15 per cent. Among the 207 patients without reactions, relapses occurred in 28, or 14 per cent. The duration of follow-up study in these two groups was similar. Thus, in these patients the relapse rates were approximately the same in patients who did and who did not have Herxheimer reactions during the first course of treatment.

Of the 56 patients with relapse, 28, or 50 per cent, had febrile reactions with the first course of treatment, and 21, or 38 per cent, had reactions at the time of re-treatment. There was no tendency for Herxheimer reactions to recur in the same half of this group. All combinations of occurrence of febrile response were noted with similar frequency: febrile reactions with both treatments (10 cases), no febrile reaction with either treatment (17 cases), fever with the first treatment only (18 cases) and fever with the second treatment only (11 cases).

Relationship to Dosage.—In the few observations concerning dosage which have been reported in early syphilis¹⁷ and in infantile congenital syphilis,^{18a}

no relationship between the incidence of reactions and the size of the initial dose in a range of 1,000 to 50,000 Oxford units of penicillin has been observed.

In order to obtain more detailed information on this point, a group of 121 patients with early infectious syphilis was studied at the Johns Hopkins Hospital. In each case the diagnosis was established by the demonstration of *T. pallidum*. Those with fever prior to treatment were excluded from the study. The initial doses administered intramuscularly to these patients varied from 1 to 120,000 Oxford units of penicillin per kilogram of body weight. In those patients who received more than a single dose within the first twenty-four hours, the amount given during the first six hours of treatment was arbitrarily chosen as that amount responsible for the Herxheimer reaction (table 3). Temperatures were recorded rectally every two hours, and a rise above 100 F. (37.8 C.) was considered significant.

TABLE 3.—*Relationship of the Incidence of Febrile Reactions to the Dosage of Crystalline Penicillin G Administered to 121 Patients with Early Syphilis*

Penicillin Dosage given in First 6 Hours	No. of Patients	No. with Febrile Reactions	Percentage with Febrile Reactions
Mg./Kg. Units/Kg.			
13-80* 20,000 = 120,000	9	5	56
2.6† 4,000	34	16	47
1.3† 2,000	22	12	55
0.075‡ 57 = 112	18	8	44
0.013 20	10	4	40
0.007 10	10	4	40
0.003* 5	8	0	0
0.007* 1	10	0	0

*Single dose only in the first forty-eight hours.

†Therapeutic doses repeated every two hours.

‡Three divided doses in the first six hours and no further penicillin for forty-eight hours.

The incidence of febrile reactions over a wide dosage range (10 to 120,000 units per kilogram of body weight) of penicillin varied from 40 to 56 per cent, with no definite trend in relation to dosage. However, when doses of penicillin of less than 10 Oxford units per kilogram of body weight were given, febrile reactions were no longer observed.

Pattern of Fever.—The pattern of the febrile response was studied in the 49 patients who had shown Herxheimer reactions (table 3). Since temperatures had been recorded every two hours in this group, detailed observations of the time of onset, height and duration of fever were available. These factors were analyzed in the following three groups: 5 patients who received large initial doses, 28 patients who received average therapeutic doses and 16 patients who received small doses of penicillin (table 3).

The temperature curves of 28 patients with febrile reactions in response to average therapeutic doses of penicillin (2,000 to 4,000 units per kilogram of body weight) were studied. The average temperature curve of this group is shown in figure 1. The febrile responses followed a uniform temporal pattern, with the height of the fever as the chief variable. The earliest elevation of temperature occurred four hours after injection. By six hours 72 per cent of the group had febrile rises above 100 F. (37.8 C.), and at eight hours 90 per cent of them showed a rise in temperature. The maximal elevations were recorded between six and ten hours

17. Footnote 4a. Olansky, S.: The Herxheimer Reactions of Relatively Small Doses of Penicillin. *J. Ven. Dis. Inform.* 28: 26-27 (Feb.) 1947.

after injection in 90 per cent of the group. In 2 cases the maximal febrile responses occurred between twelve and sixteen hours after injection. All of the temperature recordings were normal within twenty-four hours after the first injection.

The average temperature curves of 5 patients with febrile reactions following large initial doses (20,000 to 120,000 units per kilogram of body weight) and of 16 patients given small initial doses (10 to 112 units per kilogram of body weight) of penicillin are pre-

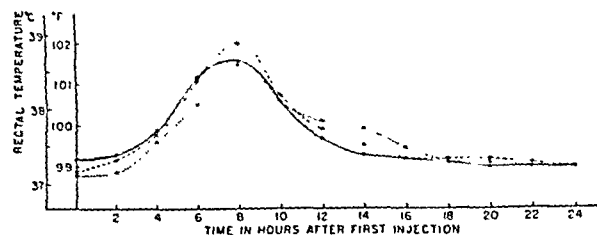


Fig. 1.—Average febrile reactions following the use of crystalline penicillin G in early syphilis in relation to initial dosage. (The broken line represents reactions to doses of 20,000 to 120,000 units per kilogram of body weight [5 cases]; the unbroken line represents reactions to doses of 2,000 to 4,000 units [28 cases], and the dotted line represents reactions to doses of 10 to 112 units [16 cases].)

sented in figure 1 for comparison with the group given therapeutic doses. Over this wide dosage range the pattern of the febrile reaction did not change. The earliest onset of fever was four to six hours after the injection was given, with the largest as well as with the smallest doses of penicillin which produced a reaction. The maximal elevations of temperature were recorded between six and ten hours after the injection was given in each of these groups, and the average heights of the fever (101.5 to 102 F. [38.7 to 38.9 C.]) were approximately the same. All of the temperature recordings were normal within twenty-four hours after the first injection over this dosage range. The individual maximal temperature recorded in the large initial dosage range was 103.4 F. (39.7 C.) at eight hours after the injection was given; in the therapeutic dosage range, 105 F. (40.6 C.) after six hours, and in the small dosage range, 104.2 F. (40.1 C.) after six hours.

The similarity of the pattern of fever in response to small doses and also to therapeutic doses of penicillin is further illustrated in figures 2 and 3.

Relationship to Disappearance of *T. Pallidum* from Lesions.—Observations were made on the relationship of the Herxheimer reaction not only to the dosage of penicillin administered but also to the disappearance of *T. pallidum* from dark field positive lesions in the same group of patients. With 300 to 120,000 Oxford units of penicillin per kilogram of body weight, early lesions became dark field negative between nine and thirteen hours after the initial injections in all cases.¹⁸ Six to ten hours after the injection was given febrile reactions occurred in one half of these patients. With 100 to 150 Oxford units of penicillin per kilogram of body weight, lesions became dark field negative after longer time intervals, which varied from eighteen to forty-eight hours after administration of the injection. In a low dosage range (10 to 80 units per kilogram of body weight), results of dark field examinations remained persistently positive for forty-eight hours. However, Herxheimer reactions occurred after the same

time interval and in the same proportion as observed with larger doses. Only with minute doses of penicillin (1 to 5 units per kilogram of body weight) were febrile reactions not observed. Thus, Herxheimer reactions occurred with doses of penicillin as little as one tenth of the minimal amount required to render lesions dark field negative.

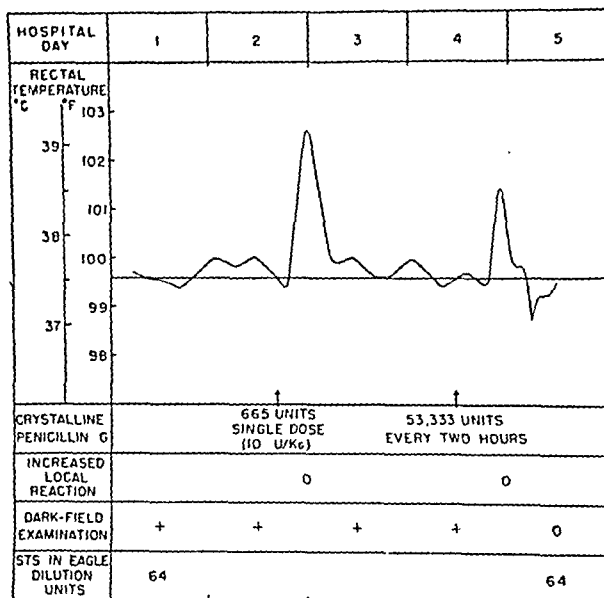


Fig. 2.—Double Herxheimer reaction following the use of crystalline penicillin G in a 62 year old white man. The diagnosis was secondary syphilis.

Double Herxheimer Reaction.—Eight patients, who had shown febrile reactions to small single doses (10 to 20 units per kilogram of body weight) of penicillin (table 3), again experienced febrile reactions when

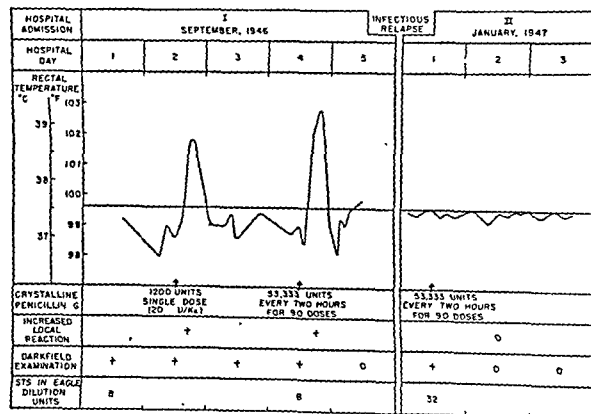


Fig. 3.—Double Herxheimer reaction following the use of crystalline penicillin G in a 19 year old Negro boy. The diagnosis was seropositive primary syphilis. The reaction followed the use of penicillin for the original infection. No febrile reaction occurred after the administration of the drug for infectious relapse.

they were given either a therapeutic dose or a repeated small dose of penicillin twenty-four to seventy-two hours later. This double Herxheimer reaction is illustrated in figures 2 and 3. The temporal pattern and the height of the second febrile reactions were similar to those of the first. In these patients results of repeated dark field examinations remained positive for *T. pallidum* in the time intervals between the first and second doses.

This reduplication of the reaction was not observed after repeated large single doses of penicillin. Five

18. Tucker, H. A., and Robinson, R. C. V.: Disappearance Time of Treponema Pallidum from Lesions of Early Syphilis Following Administration of Crystalline Penicillin G., *Bull. Johns Hopkins Hosp.* 80: 169-173 (March) 1947.

patients, who had shown febrile reactions to large initial doses (20,000 to 120,000 units per kilogram of body weight) of penicillin (table 3), were given therapeutic doses (2,000 to 4,000 units per kilogram of body weight) of the drug twenty-four to seventy-two hours later. None of these patients showed a second febrile reaction. Results of dark field examinations in this group of patients became negative for *T. pallidum* within thirteen hours after the first injection was given.

COMMENT

The use of the febrile Herxheimer reaction as an aid in the diagnosis of undetected early syphilis has been described by several authors.¹⁹ They have reported cases of unsuspected syphilis in which the diagnosis was made only after a Herxheimer reaction, occurring during penicillin therapy for gonorrhea, tonsillitis or other infection, had called attention to this diagnostic possibility. In some patients the diagnosis was missed because of the unusual location of the chancre or because it was concealed by inflammatory phimosis. In other cases the diagnosis was seemingly excluded by negative results of dark field examination and/or negative reactions to serologic tests for syphilis. When such patients were treated for concurrent infections with penicillin, the observation of febrile reactions was of some aid in the diagnosis of syphilis.

The fact that the reaction occurs only in approximately half of the patients treated with penicillin does place definite limitations on its practical use as an aid in diagnosis. When the reaction occurs in its characteristic temporal pattern, it may be of some presumptive diagnostic value. However, the absence of a febrile reaction does not exclude the presence of syphilitic infection.

In early syphilis the symptoms of the Herxheimer reaction are minor and incidental ones, which do not require the interruption of treatment. However, in late syphilis severe reactions attributed to the institution of treatment with penicillin have been reported, and methods for the prevention of such potential hazards have been sought. The use of small initial doses of 1,000 Oxford units (20 units per kilogram of body weight) of penicillin has been suggested as a method of decreasing the incidence and severity of such reactions in the treatment of late syphilis. However, the observations presented here concerning the relationship of dosage to Herxheimer reactions in early syphilis, and also similar observations in cardiovascular syphilis²⁰ and in neurosyphilis,²¹ do not support the view that small initial dosage represents a method of preventing these reactions. Febrile responses occur in early syphilis with as little as 500 Oxford units (10 units per kilogram of body weight) of penicillin. Also, the repetition of small doses or the institution of therapeutic doses of penicillin after such an initial small dose is usually followed by a second febrile response. Thus, with small doses of penicillin one may obtain repeated Herxheimer reactions, but small dosage cannot prevent the reaction.

The mechanism of the Herxheimer reaction in early

syphilis is not known. However, this reaction has been generally ascribed to the sudden destruction, presumably by lysis, of large numbers of spirochetes and the subsequent liberation of breakdown products of proteins or of an endotoxin. If this hypothesis were correct, then the frequency and severity of the phenomenon would vary directly with the total number of spirochetes destroyed. This number, in turn, would be a function of the dosage of the antispirechetal drug employed and of the total number of invading organisms originally present. However, the following observations presented in this study concerning these two variables are in disagreement with this hypothesis:

1. Over a wide range of dosage (10 to 120,000 units per kilogram of body weight) of penicillin there was tremendous variation in the number of spirochetes destroyed. Nevertheless, the incidence and severity of febrile reactions were remarkably constant.

- (a) Febrile reactions repeatedly occurred in patients given small initial doses (10 to 80 units per kilogram of body weight) of penicillin, which, as judged by results of serial dark field examinations of superficial lesions, destroyed smaller numbers of spirochetes than were killed with large doses.

- (b) The administration of large initial doses (20,000 to 120,000 units per kilogram of body weight) of penicillin did not increase the incidence or severity of Herxheimer reactions. Even with these large doses certain patients failed to show any reaction whatsoever, in spite of the fact that all detectable superficial spirochetes were destroyed within nine to thirteen hours after the injection was given, just as they were in patients who did have reactions.

2. Febrile reactions to the administration of penicillin were as frequent and as severe in seronegative primary syphilis as in secondary syphilis. This observation suggests that the reaction is not directly dependent on the total number of spirochetes originally present in the body, which may be presumed to increase from the date of infection until the height of florid secondary syphilis.

The observations presented here concerning the mechanism of the Herxheimer reaction suggest that in addition to the two factors already discussed (the number of invading spirochetes and the dosage of the antispirechetal drug), a third factor, namely, the reactivity of the host at the time of treatment, plays a dominant role in this phenomenon. At some time during the incubation period of syphilis the number of spirochetes present in the host increases to a quantity sufficient to produce a reaction. Therefore, a certain unknown minimal number of spirochetes is a first requisite. Secondly, a minimal amount of an antispirechetal drug (e.g., at least 10 to 20 units of penicillin per kilogram of body weight) is needed. Further increases in the number of spirochetes or in the dose of the drug above these threshold levels appear to play no further role in the mechanism of the reaction. Thus, this reaction, is an "all or none" type of phenomenon. When a threshold level of dosage is reached, the reaction occurs in about half of the patients. However, a third important set of unknown variables in different persons with syphilitic infections separate the reactors from the nonreactors. Further observations on the mechanism of this reaction are desirable.

SUMMARY AND CONCLUSIONS

Febrile Herxheimer reactions were observed in 41 per cent of 939 patients with early infectious syphilis treated with crystalline penicillin G. No race or sex

19. Leifer and Martin. 15b Ricchiuti, J. F.: Penicillin Therapy in Gonorrhea with Associated Undiagnosed Early Syphilis, *U. S. Nav. M. Bull.* 43: 1031-1033 (Nov.) 1944. Bauer, F. K., and Egelf, C. F.: Herxheimer Syndrome Following Penicillin in Undiscovered Syphilis, *Bull. U. S. Army M. Dept.* 4: 239-241 (Aug.) 1945. Cronin, E.: "Masked" Syphilis: Dangers of Penicillin Therapy, *Lancet* 2: 84-85 (July 20) 1946.

20. Tucker, H. A., and Farmer, T. W.: Penicillin in Cardiovascular Syphilis: Early Reactions to Administration, *Arch. Int. Med.* 80: 322-327 (Sept.) 1947.

21. Farmer, T. W., and Hoekenga, M.: The Jarisch-Herxheimer Reaction in Neurosyphilis Treated with Penicillin, unpublished data.

differences in the incidence of febrile reactions were noted.

Febrile reactions were observed with equal frequency and severity in seronegative primary, seropositive primary and secondary syphilis.

In a group of 56 patients with relapsing secondary syphilis treated with penicillin, the incidence of fever was 50 per cent with the first and 38 per cent with the second course treatment. Recurrent reactions were no more frequent in those whose first course of treatment was attended by a febrile reaction than in those who had had no fever the first time.

Within a wide range of penicillin dosage (10 to 120,000 units per kilogram of body weight) the incidence of febrile reactions remained relatively constant (40 to 56 per cent). With extremely small doses of penicillin (1 to 5 units per kilogram of body weight) febrile reactions were not observed.

The temporal pattern of the febrile reaction was rather uniform and was independent of the dosage over a wide range.

Febrile reactions occurred with single doses of penicillin as little as one tenth of the amount required to render syphilitic lesions dark field negative.

With repeated small doses of penicillin (10 to 20 units per kilogram of body weight) two febrile reactions were produced in the same patient. This double Herxheimer reaction was not observed after repeated large doses of penicillin.

The mechanism of the Herxheimer reaction from penicillin in early syphilis is not clear. It is suggested that the available evidence does not justify the hypothesis that the reaction is due solely to the sudden destruction of large numbers of spirochetes with the liberation of split proteins or endotoxins.

Further studies of the phenomenon are desirable.

THERAPY OF CHRONIC "ATROPHIC GASTRITIS" WITH EIGHT YEARS' GASTROSCOPIC CONTROL

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The anatomic entity known as chronic "atrophic gastritis" may be observed gastroscopically to improve or disappear from the stomachs of patients having pernicious anemia after liver therapy. Since the initial report of this observation by Jones, Benedict and Hampton¹ in 1935, several other reports² have appeared in the literature. In addition, gastroscopic changes in the atrophic gastric mucosa of patients without pernicious anemia have been observed by several investigators after specific types of therapy. Some of the substances used are desiccated hog's stomach ("ventriculin") by Schiff and Goodman,³ liver and

iron by Schindler, Kirsner and Palmer⁴ and others,⁵ thiamine by Bower⁶ and others, and the separate components of the vitamin B complex by Shapiro and his associates.⁷ Each of these studies was made on extremely small groups of patients and followed over relatively short periods of time. Some observers reported disappearance of atrophy with or without recurrences, while others have reported no changes.

Our studies began in 1938 with 60 patients. Excluding those on whom insufficient data were obtainable, we are here reporting the observations on 36 patients who received therapy and a control group of 16 patients who had no specific therapy or on whom therapy was started after a control period. The observations were both clinical and gastroscopic and extended over varying periods up to eight and one-half years. The chief differences between our study and those reported in the literature are as follows: (1) a much longer observation time, (2) more gastroscopic examinations and (3) the use of a control group and control periods, which were not carried out in most of the other studies. It was felt that in dealing with such a chronic disorder, longer periods of observation should have distinct advantages. The importance of controls and frequent examinations is obvious.

Our patients were all of the poorest economic class, indigents who had experienced a long period of unemployment and a longer period on the rolls of relief agencies during the years leading up to 1938. As indicated by dietary questionnaires, the food intake of these patients was considerably below the standards of normal nutritional requirements, both as to quantity and quality. Their undernutrition was further evidenced by plasma ascorbic acid levels below 1 mg. per hundred cubic centimeters in 95 per cent of the cases; low grade hypochromic anemia and varying degrees of loss of weight. However, on the basis of physical examination alone the entire picture might have been missed because of the sparseness of physical evidence of frank deficiency disease. It was observed by one of us⁸ that there was a greater incidence of so-called atrophic gastritis in a series of 702 patients who underwent gastroscopy prior to 1941 than that reported by other workers in this field. For example, Schindler⁹ found among 1,000 dyspeptic patients at the Billings Hospital in Chicago that 32.5 per cent of the chronic gastritis seen was of the atrophic type, while in our own series the incidence was 53.6 per cent.

It may be necessary to state here that while patients of the lowest economic level seem to have the highest incidence of atrophic gastric mucosa, it does not necessarily follow that persons of the highest economic level will escape such gastric changes. It should not be overlooked that many persons to whom adequate quantities and qualities of food are available have capricious appetites and eat only foods which appeal most to their tastes. Also it is probably true that there are some gastric atrophies which are not of dietary origin either directly or indirectly.

Read in a symposium on Gastritis and Gastric Neoplasms before the meeting of the Section on Gastro-Enterology and Proctology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

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THERAPY

Our patients with so-called atrophic gastritis were divided into five groups for purposes of therapy and one group for control (table 7). The first group (table

jections of liver extract and 20 to 30 minims (1.3 to 2 cc.) of dilute hydrochloric acid by mouth three times a day. The patients were observed from one to eight years and underwent gastroscopy from three to

TABLE 1.—Changes in "Atrophic Gastritis" During and After Injections of Vitamin B Complex*

		Gastroscopies														
Patient	Case No.	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	Eleventh	Twelfth	Thirteenth	Fourteenth	Total Period
J.J.	5	12-16-37 3+	1-20-38 3+	11-3-38 3+	6-20-39 3+	10-16-39 3+	11-27-39 2+	1-29-40 2+	3-1-40 0	7-25-40 1+	9-25-44 2+					7 yr.
N.C.	24	7-11-39 3+	1-25-40 3+	3-11-40 3+	4-1-40 2+	4-14-40 2+	6-6-40 0	11-9-44 0	4-10-47 1+							8 yr.
J.K.	17	10-6-39 3+	10-16-39 3+	12-28-39 3+	1-29-40 3+	2-15-40 2+	1-29-40 3+	3-11-40 2+	5-2-40 0	7-15-40 0	5-5-41 0					1½ yr.
F.W.	38	3-14-40 3+	12-23-40 3+	3-10-41 3+	9-29-41 1+	1-26-42 0										2 yr.
P.W.	34	10-2-39 4+	2-1-40 4+	2-24-40 3+	3-11-40 3+	4-15-40 2+	5-2-40 1+									7 mo.
W.J.	18	11-16-39 3+	12-7-39 2+	1-8-40 0	2-29-40 2+	3-21-40 0	5-27-40 0	7-15-40 0	11-20-44 0							5 yr.
D.G.	11	1-29-40 4+	2-9-40 3+	3-21-40 2+	4-4-40 1+	6-20-40 1+	7-15-40 2+	8-22-40 1+	5-5-47 4+							7 yr.
V.H.	1	12-5-38 3+	7-25-39 3+	9-27-39 2+	12-11-39 1+	4-25-40 2+	7-11-40 1+	1-6-41 1+	9-25-44 1+	4-21-47 1+						8½ yr.
C.B.	12	3-17-38 3+	5-12-38 2+	6-21-38 2+	8-2-38 1+	10-13-38 1+	2-17-39 0	6-1-39 0	11-2-39 0	12-14-39 0	3-14-40 2+	4-29-40 1+	5-15-41 1+	10-30-44 1+	4-17-47 3+	9 yr.
E.W.	33	4-6-39 3+	8-1-39 3+	1-4-39 1+	1-22-40 2+	2-14-40 2+	3-7-40 1+	3-25-40 0	6-7-40 1+	9-12-40 1+	10-7-40 1+	1-9-41 1+	5-15-41 1+	7-28-41 0	4-14-47 1+	8 yr.

*Period between P.N.s. indicates the period of therapy. Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+, and disappearance of atrophy by 0.

1) consisted of 10 patients who received injections of 1 cc. of vitamin B complex¹⁰ intramuscularly each day for twelve injections. Such a course was repeated three to four times, and gastroscopy carried out at the end of each course. Larger doses were given in some cases when indicated for the desired effect. Gastroscopy was performed for months and up to seven years after cessation of therapy. Four of these patients underwent gastroscopy an average of twelve times in eight to nine years; 3 patients average nine examinations in five to seven years, and 3 others averaged seven examinations from seven to two years.

The second group (tables 2, 3 and 4) consisted of 18 patients who received injections of liver extract¹¹. Ten of them received daily injections in courses simi-

twelve times each.

In the group given vitamin B complex in 7 out of 10 cases atrophy disappeared; in 4 cases it returned to some degree. The remaining 3 cases showed improvement, 1 with regression.

In the group given liver extract in 12 out of 18 cases atrophy completely disappeared; in only 2 cases did it return. The addition of iron or dilute hydrochloric acid did not bring about improvement greater than daily administration of liver extract alone.

"Nicamin" (monoethanolamine nicotinate),¹¹ containing 50 mg. of nicotinic acid, was given in daily doses—intramuscularly to 4 patients—and observations were made from six months to seven years (table 5). Two cases showed disappearance and return of at-

TABLE 2.—Changes in "Atrophic Gastritis" During and After Daily Injection of Liver Extract*

Patient	Case No.	Gastroscopies												Total Period
		First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	Eleventh	Twelfth	
A.C.	25	4-27-39 3+	2-8-40 2+	3-7-40 1+	6-3-40 0									14 mo.
M.P.	9	3-9-39 4+	10-16-39 3+	9-5-40 2+										18 mo.
T.F.	13	6-9-38 3+	12-18-39 3+	2-12-40 2+										20 mo.
N.B.	3	10-12-39 3+	1-15-40 4+	3-28-40 2+	5-2-40 0	5-20-40 0	6-11-40 0	10-7-40 0	11-13-44 0					5 yr.
R.E.	7	5-8-39 3+	10-23-39 0	3-7-40 2+	4-4-40 2+	4-25-40 1+	7-8-40 1+	9-22-40 0	10-25-43 1+	11-11-44 0				5 yr.
S.P.	16	1-16-39 3+	10-9-39 2+	2-5-40 0	3-25-40 0	5-27-40 0	7-22-40 0	9-16-40 0						18 mo.
A.T.	47	3-30-39 0	6-6-39 2+	1-11-40 1+	3-28-40 0									1 yr.
M.G.	21	11-3-38 4+	1-12-39 4+	4-13-39 4+	10-2-39 4+	3-7-40 3+	4-4-40 2+	5-2-40 2+	5-20-40 4+	9-23-40 3+	12-2-40 3+	12-29-40 2+	4-25-44 1+	6½ yr.
I.B.	45	12-1-38 3+	10-16-39 2+	1-15-40 0	6-17-40 0									6 mo.
O.H.	55	1-6-38 2+	6-2-38 3+	8-2-38 2+	4-14-41 2+									3 yr.

*Period between lines indicates the period of therapy. Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+, and disappearance of atrophy is indicated by 0.

†Loss of weight because of failure to eat.

lar to those of the vitamin B complex in group 1. Four patients received 3 cc. of liver injections once a week and 1 Gm. of ferrous sulfate per day orally. The 4 remaining patients in this group received weekly in-

rophy. One case of pronounced arteriosclerosis showed no changes.

Dilute hydrochloric acid alone was given to 4 pa-

11. The "nicamin" and liver extract were supplied by Abbott Laboratories, North Chicago, Ill. Liver extract contained 5 pernicious anemia units per cubic centimeter.

tients over a period of six months to three and one half years (table 6). No changes occurred in 3 of these patients, but atrophy disappeared after one year of therapy in the remaining patient. This may not be a spontaneous remission, since 2 control patients observed for one year each showed no improvement in atrophy.

SYMPTOMATIC RESULTS

Symptomatically there was a most dramatic improvement after the daily injection of liver extract, vitamin B complex and nicotinic acid. Improvement but less dramatic results occurred after administration of dilute hydrochloric acid. Beneficial effects were

lated to gastric changes. The constipation, general abdominal bloating, dizziness, etc., could very well be related to the bowel. Such symptoms are well known in vitamin B complex deficiencies. The nervousness, weakness, anorexia, etc., may be related to the nervous system or more general metabolic disturbances. The symptom complex seems definite enough and sufficiently different from that of pernicious anemia with gastric atrophy to warrant designation as a definite syndrome.

No Return of Atrophy.—In summary, the gastroscopic results of our studies were as follows: The daily injections of liver extract give the best and most per-

TABLE 3.—Changes in "Atrophic Gastritis" During and After Weekly Injection of Liver Extract Plus Oral Iron, Daily*

Patient	Case Number	Gastrosopies										Total Period
		First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	
B.V.	35	5-29-39 4+	7-15-40 1+	9-9-40 1+	10-6-41 1+	1-10-44 1+	11-27-44 1+	3-20-47 1+	4-10-47 1+			8 yr.
J.M.	4	1-26-39 4+	2-3-39 4+	7-18-39 3+	3-21-40 1+	4-15-40 2+	5-2-40 2+	6-6-40 2+	7-8-40 0	7-22-42 0	10-23-44 3+	6 yr.
R.P.	8	7-25-39 3+	12-18-39 0	2-26-40 0	4-18-40 0							9 mo.
E.D.	6	1-12-40 3+	5-15-40 2+	6-17-40 1+	7-1-40 0	1-27-41 0	5-6-47 0					7 yr.

*Period between lines indicates the period of therapy. Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+, and disappearance of atrophy by 0.

usually experienced by the end of the second week. The symptoms¹² complained of in order of frequency were epigastric pain, aching, fulness, tenderness, burning, cramping, bloating and belching shortly after meals and especially after heavy foods, constipation, nausea with occasional vomiting, anorexia, dizziness, generalized weakness often in attacks, loss of weight, loss of strength and energy, nervousness, tremor in the epigastrium, feeling of heat in the epigastrium. All these symptoms were alleviated either partially or completely. Occasionally there was some moderate return

manent results. Some cases observed gastroscopically up to seven years with no further therapy, but improved diet, showed no return of gastric atrophy. One or more instances of complete disappearance of atrophy occurred in each therapeutic group. There was no spontaneous decrease of atrophy in any of the 16 control patients who either received no specific therapy or were on control periods up to twelve months. In a few cases atrophy disappeared almost completely and showed no further improvement or regression over a period of years.

TABLE 4.—Changes During and After Liver Extract Weekly and Dilute Hydrochloric Acid Therapy Daily*

Patient	Case Number	Gastrosopies										Total Period
		First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	
F.B.	45	12-1-38 4+	1-16-39 2+	5-15-39 2+								6 mo.
M.J.	19	10-6-38 3+	11-17-38 3+	2-25-39 2+	10-5-39 2+	7-11-40 4+	9-19-40 4+					2 yr.
A.G.	21	4-27-39 3+	7-27-39 3+	5-27-40 0								1 yr.
A.T.	48	3-30-39 0	6-6-39 2+	1-11-40 1+	3-18-40 0							1 yr.

*Period between lines indicates the period of therapy. Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+, and disappearance of atrophy by 0.

of symptoms, but none of the patients felt as ill as before therapy. After Pearl Harbor, practically all these patients became gainfully employed. More food and a greater variety of it was available. Most of them soon gained in weight and strength, and their improved symptomatic status continued through the remainder of the eight years' period of observation. These observations strongly suggest a dietary deficiency as the cause of gastric mucosal atrophy. It appears unlikely that a local inflammation of the gastric mucosa should cause the multiplicity and variety of symptoms described. It is more probable that the symptoms are caused by a generalized metabolic or nutritional deficiency syndrome of which gastric mucosal atrophy is only a part. The epigastric distress may be directly re-

Recurrences of Atrophy After Disappearance.—Our patients also showed some recurrences of atrophy. Of interest is the fact that of the 6 patients showing recurrences of atrophy, 4 were moderate alcoholic addicts (cases 12 and 33, table 1, and cases 7 and 4, tables 2 and 3 respectively). These patients continued to drink moderately during the entire period. Atrophic changes decreased and partially returned even during therapy, only to decrease again. This observation does not prove, however, that the changes were due to the irritation of the alcohol, in our opinion. There is the strong possibility that the atrophy might have been due to substitution of alcohol for food, in which case the recurrent atrophy would still be of dietary origin.

No Improvement of Atrophy after Therapy.—Only 4 of our patients failed to show improvement after therapy. Two had received dilute hydrochloric acid

12. A table showing incidence of symptoms was compiled but was not submitted for publication.

only. The third was a woman, aged 65 (case 10, table 5), with pronounced generalized arteriosclerosis. She received extensive injections of liver extract, followed by vitamin B complex and then nicotinic acid over a period of one year without any improvement in the

TABLE 5.—Changes in "Atrophic Gastritis" During and After Injections of Nicotinic Acid*

Case Patient No.	Gastrosopies							Total Period
	First	Second	Third	Fourth	Fifth	Sixth	Seventh	
E.E. 20	6-24-40 4+	10-11-40 4+	12-12-40 4+	1-16-40 3+	2-21-41 0	4-17-47 4+		7 yr.
V.R. 14	1-22-40 4+	4-18-40 4+	7-15-40 4+	9-26-40 3+	12-9-40 2+	8-4-41 0	10-23-44 2+	5 yr.
C.B. 46	10-28-40 3+	11-14-40 3+	3-6-41 1+					6 mo.
A.C. 10	12-23-37 4+	6-12-39 3+	10-23-39 4+	1-22-39 4+	4-15-40 3+			3 yr.

*Period between lines indicates the period of therapy. Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+, and disappearance of atrophy by 0.

gastroscopic picture of atrophy. She had been seen in the clinic for two or three years before gastroscopy, and her dyspeptic symptoms had been explained on the basis of "abdominal arteriosclerosis." It appears that the atrophy in this case was due at least in part to the arteriosclerosis and diminished blood supply to the gastric tissues and was therefore little affected by any of

TABLE 6.—Changes in "Atrophic Gastritis" During and After Dilute Hydrochloric Acid Therapy*

Case Patient No.	Gastrosopies							Total Period
	First	Second	Third	Fourth	Fifth	Sixth	Seventh	
A.S. 50	5-27-40 4+	11-25-40 4+						6 mo.
A.M. 37	11-10-38 4+	3-27-39 2+	11-10-39 4+	1-15-40 4+	2-26-40 0	9-26-40 0		2 yr.
E.B. 45	12-1-38 4+	1-16-39 2+	5-15-39 2+					17 mo.
W.P. 44	7-8-40 4+	11-14-40 4+	12-9-40 4+	1-9-41 4+	1-12-42 4+			3½ yr.

*Period between lines indicates the period of therapy. Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+, and disappearance of atrophy by 0.

the therapy employed. The other patient was one who also had adrenal cortical insufficiency.

Gastric Mucosal Atrophy and Chronic Superficial

therapy the superficial gastritis would disappear leaving the more slowly healing atrophy (cases 12 and 33, table 1). This process has been seen to repeat itself in the same person in several instances. The point therefore arises that the simultaneous occurrence of chronic superficial changes and atrophic changes does not invariably indicate that chronic superficial gastritis has progressed to chronic atrophic gastritis. We believe that in many instances these findings represent chronic superficial gastritis, superimposed on an atrophic gastric mucosa of nutritional deficiency origin. The differentiation is important because the term "atrophic gastritis" implies a local inflammatory disease. Gastric mucosal atrophy seems to be in most instances a manifestation of a generalized deficiency state requiring an entirely different approach in therapeutic management.

OTHER INTERESTING FACTS IN THE EIGHT YEAR STUDY

One patient with an extensive atrophy of the gastric mucosa was observed to have pernicious anemia four years later. During five years in the clinic previously he had shown no evidence of anemia. In this case, atrophy of the gastric mucosa is known to have preceded pernicious anemia by at least a few years. With one exception, all the patients reported in this study survived the development of gastric cancer, in spite of their atrophic gastric mucosa for at least eight years. The 1 patient died in another hospital of gastric carcinoma seven years after the initial gastroscopic finding of mucosal atrophy. Gastric mucosal atrophy might well have been the predisposing factor to cancer in this case. More cases of this kind which will be found only by long term follow-up studies might eventually settle the question of the relationship between gastric mucosal atrophy and gastric cancer.

CONCLUSIONS

(1.) Further evidence of the therapeutic response of gastric mucosal atrophy to nutritional substances is presented. (2.) After nutritional therapy, prompt and dramatic relief of the entire symptom complex occurs; it may not return in seven years or more if a normal diet is followed. (3.) Atrophic gastric mucosa may regain and maintain normal appearance for seven years or more when followed by a normal diet.

(4.) There is a high incidence of gastric mucosal atrophy among economically poor and malnourished patients: (5.) Gastric mucosal atrophy in patients without pernicious anemia seems to be a part of a generalized "nutritional deficiency syndrome" rather than a local

TABLE 7.—"Atrophic Gastritis" During Control Period Without Therapy*

Subject Case	Control Period Before Therapy												Gastroscopic Examinations Control Period, No Therapy			
	F.W.	O.H.	J.K.	N.C.	V.R.	C.V.	T.F.	V.H.	P.W.	J.J.	E.E.	N.B.	H.N.	G.G.	M.D.	A.A.
	38	55	17	24	14	46	15	1	34	5	20	3	48	62	63	61
	3-14-40 3+	1-6-38 2+	10-6-39 3+	7-11-39 3+	1-22-40 4+	10-28-40 3+	6-9-38 3+	12-5-38 3+	10-2-39 4+	12-16-37 3+	6-24-40 4+	10-12-39 3+	11-27-39 2+	10-24-40 2+	2-2-42 3+	6-5-39 2+
	12-23-40 3+	6-2-38 2+	10-16-39 3+	1-25-40 3+	4-18-40 4+	11-14-40 3+	12-18-39 3+	7-25-39 3+	2-1-40 4+	1-20-38 3+	10-3-40 4+	1-15-40 3+	12-7-39 2+	11-11-40 2+	3-12-42 3+	12-18-39 2+
	3-10-41 3+		12-28-39 3+	3-11-40 3+	7-15-40 4+											6-20-40 2+
Total Period	1 yr.	6 mo.	3 mo.	9 mo.	7 mo.	1 mo.	18 mo.	7 mo.	4 mo.	1½ mo.	4 mo.	3 mo.	2 wk.	1 mo.	1 mo.	1 yr.

*Extensive atrophy is indicated by 4+, moderate by 3+, mild by 2+ and minimal by 1+.

Gastritis.—In several instances during the therapeutic period, chronic superficial gastritis was seen to be superimposed on the underlying picture of atrophy. With

inflammatory disease and warrants specific designation. (6.) Gastric mucosal atrophy may precede pernicious anemia and gastric carcinoma by several years.

DISTINCTIONS BETWEEN GASTRIC
SARCOMA AND CARCINOMAWith Special Reference to the Infiltrating
Types of Sarcoma

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This article is based on a series of 20 cases of advanced sarcoma of the stomach confirmed either by operation or autopsy. We are concerned with the various signs, symptoms and laboratory findings which could aid in making a preoperative diagnosis of gastric sarcoma. These features are compared and contrasted with similar features found in advanced carcinoma of the stomach. We believe that sarcoma of the stomach could be diagnosed more often. In this series of sarcoma 11 cases were lymphosarcoma, 3 were of the spindle cell variety and 6 were round or mixed cell alveolar sarcomas. In 11 of the 20 cases features were present to warrant a supposition that sarcoma rather than carcinoma existed.

Pathologic distinctions of gastric sarcoma based on tissue derivation, while scientifically valuable, can be made only by microscopic examination. It is generally accepted that the cytologic and embryologic variations of sarcoma present no distinctions clinically; indeed, it probably always will be impossible to make a diagnosis of gastric sarcoma with qualification as to its cellular architecture.

Ewing's¹ estimate that sarcoma comprises 1 per cent of malignant tumors of the stomach is widely cited. More recently, Marshall and Aronoff² reported an incidence of 3.2 per cent in 464 patients operated on for gastric tumors at the Lahey Clinic. In 1944, at the Mayo Clinic, of 298 malignant lesions of the stomach, 3.3 per cent were sarcoma.³ Phillips⁴ reported that in persons under 30 years of age sarcoma comprised about 6.5 per cent of malignant gastric lesions. Thus it appears that sarcoma of the stomach is encountered more frequently than is generally assumed.

Ewing's¹ classification of gastric sarcoma is widely employed: (1) spindle cell myosarcoma; (2) lymphosarcoma, and (3) miscellaneous round cell or mixed cell alveolar sarcoma. Of these, lymphosarcoma is the type most frequently seen and comprises about 60 to 65 per cent of sarcomas encountered in the stomach.⁵ It arises from the lymphoid tissue in the submucosa and usually infiltrates widely along the stomach wall into the muscularis and may penetrate the serosa causing perforation. This also holds true for some types of sarcoma in the miscellaneous group. The spindle cell myosarcomas are usually solid tumors, arising from the curvatures, and may protrude into the stomach or extragastrically.⁶ They usually occur as circumscribed masses with well limited boundaries.

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6. Ross, D. E.: Sarcoma of the Stomach, Am. J. Surg. 49:503-507 (Sept.) 1940.

Ulceration usually occurs rather late in the course of gastric sarcoma and is caused either by vascular strangulation or pressure atrophy of the mucosa due to tumor formation in the submucosa. Usually the tumor spares the orifices; therefore dysphagia and pyloric obstruction are rare as compared to carcinoma. In reviewing the location of 100 cases of sarcoma of the stomach, D'Aunoy and Zoeller⁷ listed their positions as follows: greater curvature, 17; pyloric region, 16; lesser curvature, 16; posterior wall, 12; diffuse infiltration, 11; anterior and posterior wall, 11, and anterior wall, 6. The remaining were situated on either the anterior or posterior wall and one of the curvatures, and only one was situated in the fundus.

A modification of Schlesinger's⁸ clinical classification of gastric sarcoma is offered: (1) the exogastric, arising in the outer coats (or courses to the outer coats) but little involving the organ intragastrically; (2) intragastric, projecting in the lumen as an isolated growth, and (3) infiltrative type, which involves the stomach wall profusely and which may or may not project intragastrically.

DIFFERENTIATION OF GASTRIC SARCOMA
FROM CARCINOMA

Age—The average age for persons with gastric sarcoma reported by D'Aunoy and Zoeller⁷ in 135 cases was 36.7 years. Balfour and McCann⁹ reported an average age of 43 years. In our series it was 38.5 years. These contrast with the average age of persons with carcinoma of the stomach, who are about ten to fifteen years older. This, however, should not be given too much significance because the age of our patients ranged from 18 to 78 years. Relatively, however, the younger the patient with malignant disease of the stomach, the greater is the probability of sarcoma.

Sex—Bockus¹⁰ stated that sarcoma is only slightly more prevalent in the male. In the 135 cases reviewed by D'Aunoy and Zoeller⁷ 73 of the patients were male and 43 female and in the remainder there was no information as to sex. Askey¹¹ and others in reviewing 335 cases reported 70 per cent occurring in males. In our series 75 per cent of the patients were male. The incidence of carcinoma in the sexes does not differ materially from that of sarcoma.

Duration of Symptoms—In sarcoma of the stomach symptoms may be present from two months to several years. In inoperable cases, the average duration of symptoms is thirty-seven months.¹² In our cases it was twenty-nine months. In carcinoma the average duration of symptoms is eight to twelve months. In sarcoma there is no relationship with previous peptic ulcer, while about 5 to 10 per cent of prepyloric gastric ulcers became carcinomatous.

Pain—Pain is the most common symptom; it occurred in 80 per cent of our cases. It is localized in the left upper quadrant, or tends to the left, although it may be epigastric completely. The pain is often more severe than that seen in carcinoma.⁶ In about 50 per cent of the cases the pain simulates peptic ulcer,¹³ but

7. D'Aunoy, R., and Zoeller, A.: Sarcoma of the Stomach, Am. J. Surg. 9:444-474 (Sept.) 1930.

8. Das Magensarkom klinisch vom

791, 1916.

Sarcoma of the Stomach, Surg.

Philadelphia, W. B. Saunders

Company, 1943, vol. 1.

11. Askey, E. V.; Hall, E. M., and Davis, K. S.: Sarcoma of the

Stomach, West. J. Surg. 89:839-847 (Nov.) 1931.

12. O'Donoghue, J. B., and Jacobs, M. B.: Lymphosarcoma of the

Stomach, Am. J. Surg. 68:246-253 (Nov.) 1942.

13. Rafsky, H. A.; Katz, H., and Kriger, C. I.: Varied Clinical

Manifestations of Lymphosarcoma of the Stomach, Gastroenterology 5:297.

305 (Oct.) 1944.

this is not significant as it is often seen in carcinoma. The distinction, however, between relief of pain in ulcer and the two malignant diseases of the stomach is that in the latter there is progressive loss of weight.¹² In an analysis of 444 patients with gastric carcinoma, pain was present in 92.8 per cent.¹⁴ Thus, pain is the most common symptom in both sarcoma and carcinoma. In a general way, it seemed to us that pain tended to be more severe in sarcoma, although there were 4 cases in which pain was absent.

Weakness, Cachexia and Anemia—Weakness, Cachexia and Anemia are generally grouped together in the literature, which makes it rather confusing on each of these points. Bockus¹⁰ stated that anemia, loss of weight and strength and other constitutional symptoms occur with about the same frequency as in carcinoma. Rafsky and his associates¹³ stated that they were usually absent in lymphosarcoma of the stomach. Madding¹⁵ in reviewing 67 cases of sarcoma states that some patients complained of loss of weight, weakness and anorexia and that anemia (microcytic, hypochromic) was present in most cases but was not as great as in carcinoma. Drane¹⁶ stressed the well preserved nutrition in cases of gastric sarcoma. In our opinion the symptoms of weakness, loss of weight, cachexia and anemia should not be grouped because individually they have varying degrees of differential diagnostic value. One is often struck by the surprising well-being of a patient with advanced sarcoma of the stomach. In our group of 20 patients, 12 (60 per cent) were employed at the time of examination. The remaining 8 patients complained of definite weakness. In roughly the same stage of carcinoma of 100 patients, weakness was present in 94 per cent. The same differential occurs concerning loss of weight. In carcinoma of the stomach, loss of weight is progressive and usually severe. Slight and short weight increases may occur, but a continuing decline soon supervenes. In sarcoma, the loss of weight was pronounced in only 7 of our patients. Eleven had lost a negligible few pounds and 2 had no definite loss of weight.

That the nutty brown color so characteristic of gastric carcinoma does not occur in sarcoma is a clinical point of interest. The skin is pallid and its appearance is that of a simple anemia. Very occasionally one sees a slight lemon tint as noted sometimes in leukemia.

There are no worth while points to present in the type or degree of anemia between the two diseases. The anemia may be slightly less in sarcoma. In 444 cases of carcinoma of the stomach, jaundice was present in 23.2 per cent.¹⁴ It was absent in all our cases and we have seen no mention of its occurrence in sarcoma in the literature.

Vomiting and Hematemesis—Vomiting occurs in 8 to 10 per cent of gastric sarcoma,¹⁷ and in 16 per cent of carcinoma.¹⁴ Hematemesis is encountered in 15 to 20 per cent of sarcoma and about 10 per cent in carcinoma. It is important to remember that in sarcoma vomiting and hematemesis occur late probably because pyloric obstruction is less frequent than in carcinoma and the mucosa is secondarily involved in sarcoma. Bleeding in sarcoma is often severe and may be terminal.

Palpable Tumor—It is reported that a mass may be

palpated in 30 to 50 per cent of gastric sarcoma.¹⁸ In carcinoma this percentage is 80 per cent after the third month of symptoms. This difference is due to the fact that the largest percentage of sarcoma is infiltrative in character and thus may not form a definite, easily felt mass. Therefore the sarcoma may be of large extent and yet not be palpable. A sense of deep, diffuse resistance may be encountered rather than a localized hard mass and may be mistaken for a tumor of the pancreas, colon or kidney. In our 20 cases a tumor was palpable in 10. If the roentgenogram shows an extensive involvement of the stomach and no tumor is palpable, or only a doughy mass is observed, sarcoma should be suspected.

An enlarged spleen is palpable in 10 per cent of gastric sarcomas.¹⁰ In our series the lower pole of the spleen was palpated in 3 (15 per cent). Palpable spleens are rare in carcinoma.

Virchow's gland, sometimes palpable in gastric carcinoma, is not observed in sarcoma. Visible gastric peristalsis, characteristic of pyloric obstruction, was not observed in our series.

Gastric Analysis—It is reported that 85 per cent of gastric carcinoma shows an absent or low free acidity.¹⁵ Madding and Walters² stated that in lymphosarcoma of the stomach there is achlorhydria in the largest number of cases and that normal acid values are found in but 20 per cent. In our series 8 had acid values which were normal or above normal and 12 had decidedly lowered or absent free hydrochloric acid. Of these 12 patients showed no free hydrochloric acid but did have some combined hydrochloric acid (not total acid). Five were achylia. Therefore, there were 15 of 20 patients (75 per cent) who had hydrochloric acid (free or combined) in the gastric juice. This is distinctly higher than that observed in gastric carcinoma.

Blood in gastric contents and stools is encountered in about 65 per cent of carcinoma of the stomach.¹⁴ All observers believe that the percentage is much lower for sarcoma. This is due to the fact that ulceration occurs much later in sarcoma and may be absent throughout the course of the disease. In our group of cases, blood was encountered in 4 instances. Death from exsanguination, however, is more frequent in sarcoma.

Gastroscopy—Schindler¹⁹ stated that the infiltrative type of lymphosarcoma presents characteristic gastroscopic findings which cannot be mistaken for any other picture. This statement has not been accepted generally. Giere²⁰ reported a case of lymphosarcoma diagnosed gastroscopically one month after the roentgenogram had failed to disclose any abnormality. In solid tumors, the endoscope may disclose a solitary tumor with a sessile base, the rest of the mucosa appearing normal. (If the tumor is pedunculated, it probably is benign). In the infiltrative type of sarcoma, the gastric rugae are swollen and edematous. Later, ulcers and hemorrhages may be noted. The picture is not as characteristic as in carcinoma. Gastroscopy was performed in 16 of our cases. In 10 of these cases the diagnoses were: benign tumor 4, gastritis 2, Hodgkin's disease 2, leukemic infiltration 1 and tuberculosis 1. In the remaining 6 cases sarcoma was strongly suggested, all of which were instances of lymphosarcoma. The method should be employed, and it is of

14. Abraham, R. H., and Hinton, J. W.: Carcinoma of the Stomach, Surg., Gynec. & Obst. 71:135-141 (Aug.) 1940.

15. Madding, G. F.: Lymphosarcoma of the Stomach, Proc. Staff Meet., Mayo Clin. 14:202-205 (March 29) 1939.

16. Drane, R.: A Brief Consideration of Sarcoma of the Stomach, Am. J. Roentgenol. 34:755-758 (Dec.) 1935.

17. Rafsky, Katz and Krieger.²³ Madding.²²

18. Bockus.¹⁰ Rafsky, Katz and Krieger.¹³

19. Schindler, R.: Gastroscopy, Chicago, University of Chicago Press, 1937, p. 260.

20. Giere, C. N.: Lymphosarcoma, Diagnosed Gastroscopically, J. A. M. A. 117:173-175 (July 19) 1941.

especial value when its presumptive diagnosis of sarcoma agrees with that of the roentgen examination.

Roentgenographic Findings—The roentgen examination, properly conducted, is the most reliable method for diagnosis available. Rugal patterns should be studied with small quantities of barium. There should be adequate manipulation and palpation at roentgenoscopy. The fluoroscope is valuable especially in noting the solitary growths or masses projecting into the stomach, presence or absence of peristalsis and stiffening of the gastric walls. The statement that a positive diagnosis of sarcoma cannot be made by roentgen rays²¹ or by any method short of exploration and biopsy¹⁰ constantly runs through the literature. Rafsky and his associates¹³ reported a definite roentgen diagnosis in 33 per cent of their series of lymphosarcoma. In our own series 11 of the 20 cases (55 per cent) were presumptively diagnosed as sarcoma. This percentage compares with a positive roentgen diagnosis of 90 per cent in carcinoma of the stomach.¹⁴ There are points of difference in the roentgen findings of these two malignant diseases of the stomach.

Gastric deformities to be observed in sarcoma include the following: (1) a rounded, well defined endogastric mass, bearing a demonstrable ulcerative niche²²; (2) a tumor arising on the greater curvature, even when it has the typical saucer shape of carcinoma; (3) giant rugae; (4) diffuse decrease in the size of the stomach; (5) absent or few "thumb indentations" characteristic of carcinoma, with the irregularity in gastric outline consisting of shallow serrations involv-

regular in outline; masses may be seen in carcinoma between the curvatures; when present in sarcoma, it is usually late in the disease, and while the tumor may be of large size (especially leiomyosarcoma) there is usually a small fleck of barium somewhere in the mass; most cases of sarcoma may never show a definite well defined tumor mass; (7) peristaltic waves are dependent on the amount of infiltration of the gastric wall; if intramural infiltration is extensive, peristalsis will be absent; however, in sarcoma, peristalsis, sluggish or irregular, is usually preserved later than in carcinoma. In our series, as already stated, a presumptive diagnosis of sarcoma rather than carcinoma was made in 55 per cent. A notable error is that shown in figure 1 (a case of Dr. Adolph Abraham).

Another unusual case of hypertrophic gastritis that closely simulated the roentgen picture of malignant growth is illustrated by figure 2 (case of Dr. Harry Barowsky).

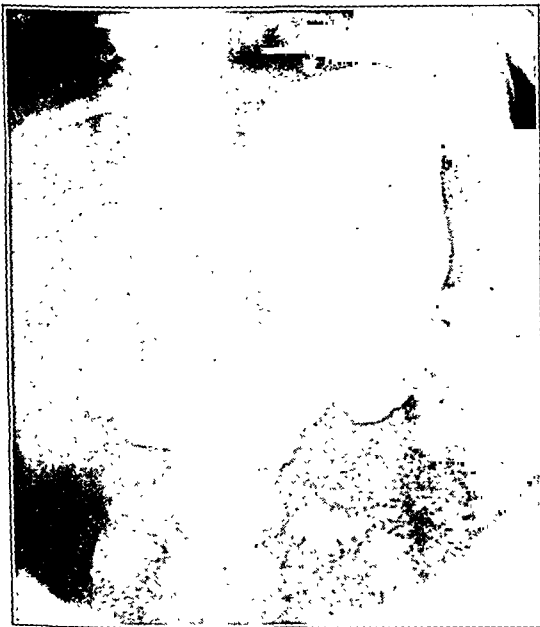


Fig. 1.—Carcinoma diagnosed as sarcoma because of diffuse tumor formation and some shallow serrations of curvatures. There was no obstruction. Pathologic diagnosis was colloid carcinoma. On reexamination of films after operation it was noted that the growth is intragastric, the left half of the stomach appears normal and the defect on the greater curvature is more suggestive of carcinoma.



Fig. 2.—Deformity due to giant hypertrophic gastritis.

REPORTS OF CASES

The following 4 cases illustrate various features of gastric sarcoma.

CASE 1.—F. S., (a patient of Dr. Charles Friels, Jersey City), a farmer, 35 years of age, had been in good health until eleven months before being examined by one of us (A.B.). His illness began with anorexia, which became progressively worse. Three months later he began to complain of pain in the upper left part of the abdomen and vomited occasionally. There was a weight loss of 12 pounds (5.4 Kg.) over this period. Physical examination revealed no significant abnormality. No abdominal mass was palpable. Several test meals revealed normal values in the gastric contents, and in some a hyperchlorhydria existed. There was a mild degree of hypochromic anemia. Roentgen examination disclosed an isolated mass in the prepyloric region with no generalized involvement of the stomach. There was about 10 per cent gastric retention in six hours. Gastroscopecally, a mass with a sessile base was seen and a few punctate hemorrhages were scattered in the mucosa. Because of the wide base by which the

ing the stomach to considerable extent; (6) in localized sarcoma, a shadow may occur which is suggestive of benign tumor; at fluoroscopy it is not movable and usually is well rounded; in benign tumor the shadow is liable to be pedunculated, movable and ir-

21. D'Aunoy and Zoeller;⁷ Madding.¹⁵

22. Carter, R. A. and Laing, D. R.: Non-Carcinomatous Tumors of the Stomach, *Radiology* 28:301-314 (March) 1937.

tumor was attached, a tentative diagnosis of solitary gastric sarcoma was made. At operation (subtotal gastrectomy) the tumor was removed and the pathologic diagnosis was spindle cell sarcoma. The patient died twenty-two months later from metastatic sarcomatous masses in the lungs, abdomen and subcutaneous tissue.

Comment—This case illustrates pronounced anorexia, slight loss of weight, absence of abdominal mass and normal gastric acidity. Roentgenograms revealed an immovable intragastric mass.

CASE 2.—L. M., a young man of 18 years weighing 181 pounds (82.1 Kg.) complained of anorexia of four months' duration. "To get enough food" he had to resort to fluids and semisolid foods. He had lost 5 pounds (2.3 Kg.) over this period. There were no other complaints, he attended school regularly and engaged in athletics. Because his mother thought he looked pale, he was treated for moderate anemia. When first seen he presented slight nonpainful resistance in the epigastrium and mild hypochromic anemia; his gastric contents had a normal acidity. His stomach was extensively involved with infiltration of the walls and a diagnosis of gastric sarcoma was made. At operation an extensive partial gastrectomy was performed; the tissue diagnosis was lymphosarcoma. He died on the fourth postoperative day of an abdominal hemorrhage.



Fig. 3.—The stomach shows a generalized infiltrative process in the wall with diffuse decrease in size and irregular serrations on the curvatures. There is no obstruction. Lymphosarcoma.

Comment—This case illustrates the occurrence of lymphosarcoma in youth, slight loss of weight, absence of constitutional symptoms and presence of normal gastric acidity.

CASE 3.—W. R., (a patient of Dr. Pettit, Ridgewood, N. J.), a banker 68 years of age, had been troubled for ten years with a squamous cell carcinoma of the face. He had had a number of excisions, roentgen and radium treatments and when first seen had a large inflammatory area over the left ear. The upper third of the left external auricle was sloughed away, exposing the cartilage. During the preceding year he had lost considerable weight (14 pounds [6.4 Kg.]) and a mild degree of weakness had developed, although he was able to work. There were no gastric symptoms until six weeks before examination, when he became slightly nauseated and had diarrhea, both of which persisted. On examination, there was a soft diffuse

mass (stomach) palpable in the epigastrium and extending to the right. The spleen was palpable and the liver edge firm and rounded. The red blood cells were 4,100,000, and there was 11 Gm. of hemoglobin per hundred cubic centimeters. The



Fig. 4.—Diffuse infiltration in the distal half of both curvatures with narrowing of the gastric lumen. Lymphosarcoma.

white blood cells were 9,100, with 74 per cent polymorphonuclear cells. An Ewald test meal revealed no free hydrochloric acid. Total hydrochloric acid was 25 degrees and total acidity

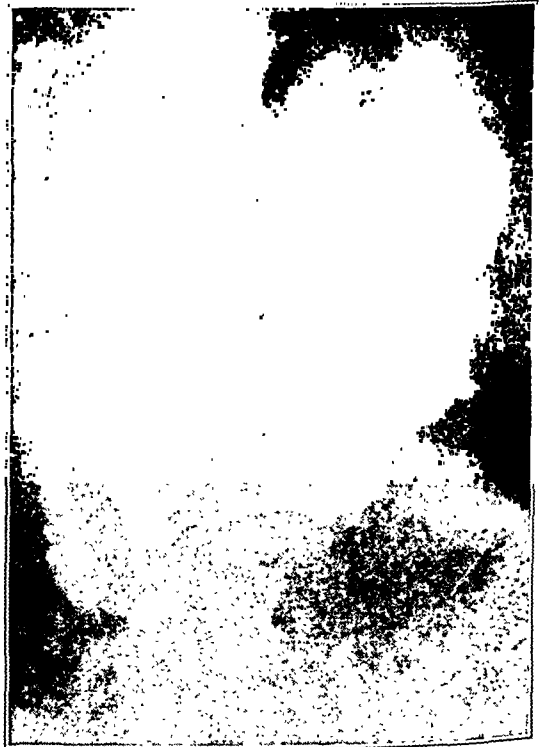


Fig. 5.—Showing the general stiffening of the stomach in a case of lymphosarcoma. Irregular formation is noted about two thirds down along the lesser and greater curvatures indicating the general involvement of the stomach walls.

31 degrees. Roentgen examination revealed a generalized infiltration throughout the stomach with no apparent masses or obstruction. There was a mild degree of cardiospasm. A diagnosis of lymphosarcoma was made. At operation almost a

complete gastrectomy was performed; the stomach was diffusely infiltrated by the sarcomatous process and there was chronic adenitis of the omental lymphatic nodes. The patient died eight weeks postoperatively of acute heart failure, after he had seemed to be slowly improving.

Comment.—This case is interesting because of the coincidental squamous cell carcinoma, short history of gastric symptoms, small loss of weight and palpable spleen. Hydrochloric acid was present in the gastric contents.

CASE 4.—A. J. (a patient of Dr. Emil J. Knips, Plandome, L. I.), a woman aged 49, mother of seven children, had a carcinoma removed from her breast ten years previously. Two years before being seen she began complaining of "nervousness" and pain in the region of the stomach. This pain became progressively worse for ten months. On physical examination a generalized doughy tumor was palpated in the upper part of the abdomen. Because of the character of the roentgenograms and a 4 plus Wassermann reaction, a diagnosis of gastric syphilis was made three months previously, and she had been placed on antisyphilitic therapy without benefit. She had lost only a few pounds in weight, was not anemic, had a fair appetite and consumed ample foods of all types, which, she said, did not increase her stomach distress or pain. She had vom-

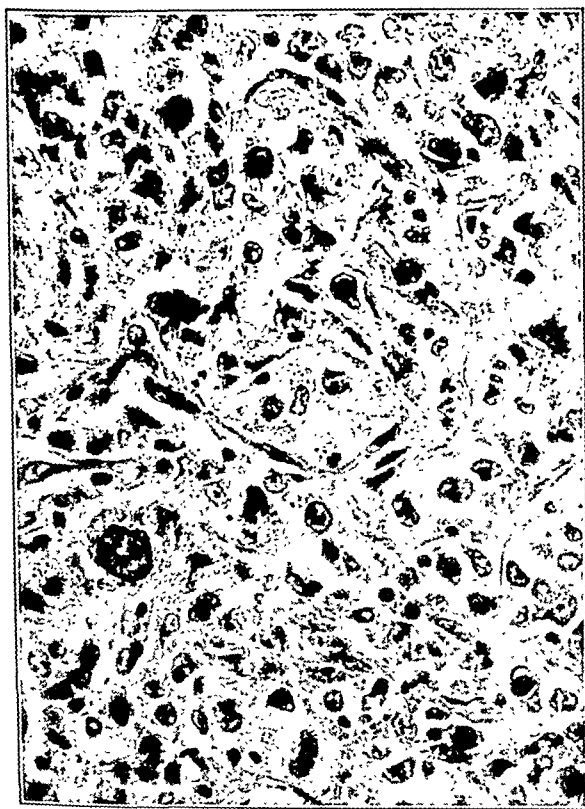


Fig. 6.—High power photomicrograph of tissue of the stomach, showing cells of various shapes and sizes with extremely large cells containing large nuclei and nucleoli predominating. In places these cells are spindle shaped and show characteristic tiny fibrils. Mitotic figures are noted throughout. Leiomyosarcoma.

ited only twice, both times in the week before being seen by one of us (A. B.). Physical examination revealed the tumor described. An Ewald test meal showed hyperchlorhydria. The stools were negative for blood in several examinations. Roentgenograms showed a generalized stiffening of the stomach walls with absent peristalsis and with a mass in the pyloric region. The gastroscopic diagnosis was lymphosarcoma. The portion of the stomach with the tumor mass was removed. The pathologic report was leiomyosarcoma. The operation was followed by roentgen therapy over the stomach region. She died three months after the operation in the New York Hospital from a massive gastric hemorrhage.

Comment.—This case, which was originally diagnosed as gastric syphilis, illustrates but slight loss of weight with fair appetite. No anemia was present. There was hyperchlorhydria, and death was due to massive hemorrhage. This patient also had a carcinoma of the breast ten years before.

GENERAL COMMENT AND CONCLUSIONS

It is important in considering tumors of the stomach to realize that about 85 per cent are carcinoma. Rigler and Ericksen²³ stated that 11 per cent are benign, as noted earlier in this paper, slightly over 3 per cent are sarcomas. Even this figure of 85 per cent is high when one includes syphilis, tuberculosis, Hodgkin's disease, etc. If the possibility that a gastric malignant growth is not carcinomatous is continually entertained, the first and most important step toward the accurate presumptive diagnosis of gastric sarcoma is achieved. A careful evaluation of the various symptoms, signs and laboratory findings will, in increasing numbers, lead to a higher percentage of correct preoperative diagnoses. From the present group of cases and the literature on malignant disease of the stomach, we can draw the conclusions summarized in tables 1 and 2.

TABLE 1.—Clinical Symptoms (in Percentages)

	Sarcoma	Carcinoma
Age (years)	38.5	53
Sex, male	75	70
Duration of symptoms (months)	29	8-12
Previous history of peptic ulcer	0	5-10
Pain	80	92.8
Weakness (definite)	40	94
Weight loss (pronounced)	35	98
Cachexia	0	92
Jaundice	0	23.2

TABLE 2.—Physical, Laboratory, Gastroscopic and Roentgen Findings (in Percentages)

	Sarcoma	Carcinoma
Palpable tumors	50	80
Firm tumors	30	85
Soft (doughy) tumors	70	15
Palpable spleen	15	0
HCl, normal, increased	40	15
HCl, absent, low (combined)	60	85
Blood in gastric contents and stools	20	65
Suggestive gastroscopic diagnosis	37	75
Suggestive roentgen findings	55	90

In favor of a diagnosis of gastric sarcoma as compared to carcinoma in an average way, the following points are noted:

1. Average age for sarcoma is 38.5 years; in carcinoma it is fifteen years older.
2. Because of slowness of the growth, sarcoma may extend twice or even three times longer than carcinoma.
3. There is no relationship with peptic ulcer in sarcoma.
4. Weakness in cases of sarcoma is less than half that of carcinoma.
5. Loss of weight is about one third that noted in carcinoma. In sarcoma there may be only slight anemia or none. In carcinoma it is more definite.
6. No jaundice is present in sarcoma; in carcinoma it occurs in 23.2 per cent.
7. Palpable tumor in sarcoma is a little more than half as common as in carcinoma. The sarcoma masses are vague and doughy in consistency, whereas in carcinoma, generally, the mass is easily felt and firm to hard in character. Visible peristalsis is not noted in sarcoma.
8. The spleen is enlarged in 15 per cent of the cases of sarcoma and not present in carcinoma.
9. Vichow's gland is not observed in sarcoma.
10. Hydrochloric acid of the free and combined types was present in 75 per cent of sarcoma; this figure is much higher than that found in carcinoma.
11. Blood in gastric contents and stools is observed in one third of the cases as compared to carcinoma.

23. Rigler, L. G., and Ericksen, L. G.: Benign Tumors of the Stomach, Radiology 26:15 (Jan.) 1936.

12. The gastroscope is less valuable in diagnosing sarcoma than carcinoma.
13. The roentgenograms are valuable in both conditions, although less so in sarcoma than in carcinoma.
14. Roentgen evidence suggestive of sarcoma is present in 55 per cent of the cases.

Recognizing that various combinations of findings are different in different cases, we would suggest a working formula as follows: (1) roentgen; (2) clinical findings and gastroscopy; and (3) laboratory. If the roentgenograms are definitely suggestive of sarcoma we would make a diagnosis. If the roentgenograms are not characteristic of carcinoma or sarcoma, we would give increasing importance to the features listed under (2) and (3), and if enough suggestive findings are met with we would make a presumptive diagnosis of sarcoma. One must keep in mind that in some cases of gastric sarcoma diagnosis is not possible even at operation without a microscopic examination of tissue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BERRY AND COLE AND
DRS. BASSLER AND PETERS

DR. HYMAN I. GOLDSTEIN, Camden, N. J.: In 1920 and 1921 I studied the available literature of the world in preparation for papers on lymphosarcoma of the appendix. At that time I collected about 650 cases of primary sarcoma of the gastrointestinal tract, liver, pancreas and gallbladder. There were about 270 cases of primary sarcoma of the stomach, 18 of the appendix, about 150 of the intestines, 36 of the esophagus, 65 of the tongue, 16 of the gallbladder, 59 of the liver and 19 of the pancreas. Obstructive symptoms, occurring late in the course of the disease, are not uncommon in young patients. Symptoms may be absent for some time or only slight. Gastric lesions may become large and extensive before severe loss of weight and obstruction occur. Taylor (1939), Madding (1939), Collins and Carmody (1937) and others recently reported interesting cases of gastric sarcoma, as did Johnson, Lee and others, who stated, "Lymphosarcoma of the stomach is not a rare neoplasm." Their patient was a man aged 23 years. Dr. George Dock reported a case of "Sarcoma of the Stomach" while at Ann Arbor. The man was 55 years old. A successful gastrectomy was performed (1900), although he had the tumor for nearly two and one-half or three years. This patient lived until 1919. He died from pneumonia and had had no gastrointestinal symptoms for nearly twenty years! Halle's (1780-1781) case in a young woman with "Induration skirrheuse des membranes de l'estomac" was probably a gastric sarcoma. Since Mathis, in 1602, and Daniel Schwabe, in July 1635, performed successful gastrotomies, and Daniel Karl Theodor Merrem (1790-1859) of Giessen successfully resected the stomach in a dog (in 1810), we have made great progress in gastrointestinal surgery. We have overlooked the successful extensive resection of the intestines in a 13 year old boy by John Nedham (reported in 1756) and the first pylorotomy for cancer of the stomach, by Jules Pean (1830-1898) in 1879, before T. Billroth (1881). The speaker's report of about 28 or 30 five year survivals out of about 400 cases of gastric malignant growths is not encouraging. Perhaps early gastroscopy and earlier surgical intervention would save many more patients.

DR. HENRY A. RAFSKY, New York: I was interested in Dr. Berry's paper because I found that patients with atrophic gastritis improve when their nutritional status has improved. Dr. Bassler's paper is timely. Articles on these subjects should be encouraged because these so-called rare lesions, when we focus attention on them, are not as uncommon in an active ward

service as we think they are. Lymphosarcoma of the stomach is the commonest type encountered. This lesion often mimics peptic ulcer in its onset and in its clinical course. At times we found hyperchlorhydria, but what we did not find until late in the disease was occult blood in the stool or in the gastric analysis. The clinical characteristics of carcinoma of the stomach, weight loss, anemia and cachexia, were not usually present in our series. The reason that carcinoma of the stomach can be detected earlier than lymphosarcoma lies in the difference in the pathologic changes of the two lesions. Gastric lymphosarcoma often arises extragastrically and invades the stomach from a lymph node or starts within the lymphoid tissue of the submucosa. It may become a large tumor involving and surrounding the stomach, and may exist without causing any symptoms, or may form an infiltrating process of the submucosa, producing a picture of severe gastritis or giant rugae. In a suspicious case sarcoma should be suspected, especially if the characteristic symptoms associated with carcinoma are not present.

DR. RUDOLF SCHINDLER, Los Angeles: We must no longer treat gastric carcinoma as one single disease entity. At least two forms must be differentiated: the sharply limited ones, types I and II, and the infiltrative forms, types III and IV. The limited forms are curable; the infiltrative forms are, with rare exceptions, incurable. The limited carcinomas must be removed even if they involve the whole stomach. To attack the infiltrative forms, except if they are small, is not practical. These patients have almost no chance of being cured, except perhaps by total gastrectomy. This consideration is especially important in the management of benign gastric ulcer. The differential diagnosis never lies between benign ulcer and limited carcinoma but only between benign ulcer and infiltrative carcinoma. Benign ulcer can well be treated medically; the resection has a definite mortality. Let us assume that the operative mortality of benign ulcer is only 3 per cent, and let us see what happens if we resect 100 stomachs which contain a doubtful ulcer. We will then kill, unnecessarily, 3 persons, if the ulcers are benign, in order to accomplish what, if they are all malignant? Practically nothing. Let us better concentrate on surgery for small-sized, beginning gastric carcinomas, which the surgeon may not be able to palpate but which may be diagnosed by roentgen examination and gastroscopy. If we follow our cases of pernicious anemia and atrophic gastritis, as Dr. Berry has, we will have a higher percentage of cures by discovering small symptomless carcinomas.

DR. SAMUEL FRIEDMAN, New York: A large number of patients suffering from cancer consult their physicians when it is too late. Physicians do not always make a diagnosis early enough for the surgeon to do a successful operation. How can we relieve the unnecessary suffering and reduce the death rate from cancer? Years ago I realized that we must feel equally responsible to our patients to relieve them as to cure them. We must caution patients of the seriousness of the delayed diagnosis. We must not be caught unawares in the diagnosis of serious diseases. For the past fourteen years I have been inviting my patients, four or five times annually, to my home to listen to lay lectures on the early symptoms of cancer and to lectures on many other serious ailments. These lectures, given by physicians and surgeons, and by myself, were usually attended by between 300 and 400 patients. Motion pictures of abdominal surgery, roentgenograms of tuberculous lungs and sound motion pictures on the heart in health and disease were shown. It is the sacred duty of physicians to reduce the suffering and mortality rate by teaching patients in groups, in the manner suggested. Judging from personal experience, I believe that half of those who die from carcinoma could probably live, and in comfort, if all physicians earnestly followed this suggestion.

Clinical Notes, Suggestions and New Instruments

STOMATITIS DUE TO STREPTOMYCIN

Report of Three Cases

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and

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Since the use of streptomycin has become widespread in the treatment of many infections in human beings, the question of its untoward side reactions assumes importance. To date, many reports of toxic reactions following its use have appeared in the literature.¹ One of the most constant of these reactions is temporary or permanent impairment of the eighth nerve apparatus.² No other neurologic involvement following streptomycin therapy has been reported. Local irritations at the site of injection,³ fever,⁴ dermatitis,⁵ pruritis, rhinitis, conjunctivitis,^{1b} swelling of the buccal mucous membranes, flushes,⁴ and eosinophilia have all been noted, either singly or in combination, and are considered manifestations of hypersensitivity to the drug. This report deals with 3 cases of painful stomatitis, at first resembling the aphthous variety, which developed during the treatment of pulmonary and extrapulmonary tuberculosis with streptomycin.

REPORT OF CASES

CASE 1.—L.B., a 55 year old man, was admitted to Montefiore Hospital on April 21, 1947, with the diagnosis of pulmonary tuberculosis. He had been in good health until midsummer of 1945, when he first noticed that his expectorations were occasionally streaked with blood. At that time, he had no fever, night sweats, thoracic pains or weight loss. A roentgenogram of his chest and an examination of his sputum revealed no abnormalities. He was asymptomatic for about one year and then noticed the gradual onset of fatigue and a slight loss in weight. In October 1946, a roentgenogram of the chest and sputum and bronchoscopic examinations revealed no abnormalities. In December, study of the sputum revealed acid-fast bacilli. Sudden hemoptysis, of about one-half glass of bright red blood, occurred on Jan. 14, 1947, and the patient was admitted to Morrisania Hospital, where he remained until his admission to Montefiore Hospital. In February, he received streptomycin for two and one-half weeks before its use was discontinued for nonmedical reasons.

The patient was known to have had diabetes for fifteen years, which was well controlled with insulin. He had had hemiparesis of the left side, for three years. There was no history of asthma, hay fever or urticaria. No one in his immediate family had allergic manifestations.

Physical examination revealed a slightly stout well developed white man in no discomfort, with no dyspnea, cyanosis or

palor. His chest was hypersthenic, with slightly diminished expansion on the right side. Fine rales were noted in the upper lobe of the left lungs, associated with harsh breath sounds and dullness to percussion posteriorly. There was slight facial weakness on the left and flexion paresis of the left forearm, with some atrophy of all the muscles of the left upper extremity. There was paralysis, of the upper motor neuron type, of the left lower extremity. Laboratory observations on admission were within normal limits. His sputum showed tubercle bacilli on direct smear.

Bed rest was prescribed until July 22, when 1 Gm. of streptomycin daily, 166 mg. every four hours, was prescribed. This dosage was maintained until August 26, when it was increased to 2 Gm. daily. On August 28, a generalized faintly erythematous nonpruritic finely papular rash developed, especially prominent on his back and abdomen. The next day he complained of pain in his mouth and throat, which was intensified by swallowing. At that time a few yellowish vesicles were visible on the mucous membrane of the cheeks, around the anterior pillars of the tonsils and on the inner surfaces of the lips. It was thought that this was nonspecific aphthous stomatitis, and warm saline gargles and the application of a solution of 1 per cent brilliant green in 50 per cent alcohol were prescribed. Despite medication, the vesicles eroded and were covered by a gray shaggy necrotic membrane. Smears and cultures revealed only a few fusiform and spirochetal organisms, in insufficient numbers to warrant the diagnosis of Vincent's disease. The presence of 10 per cent eosinophils on August 29 indicated the possibility of allergic stomatitis. The dermatologic consultant, Dr. Harry Keil, described the lesions as follows: Practically all of the buccal mucous membrane, as well as the vermilion portion of the lips, the undersurface of the tongue, the right pillar of the tonsil and extending into the pharynx, were sites of diffuse erosive stomatitis. The edges of some of the lesions showed a whitish membrane, but there was no definite evidence of bullae.

Treatment with streptomycin was discontinued on September 4, and remarkably rapid improvement occurred. In two days, the soreness and erythema had decreased, and within five days little evidence of the stomatitis remained. By this time the dermatitis had undergone fine desquamation on the back and extremities, with lamellar desquamation on the hands. Treatment with streptomycin was started again September 13, and after five doses (166 mg. every four hours) stomatitis, of the same character as previously described, recurred. In spite of cessation of treatment with the drug, it took fifteen days for all evidence of these oral changes to disappear. On September 18, the dermatologist stated that the disappearance of the eruption on the discontinuance of treatment with streptomycin and the recurrence of the stomatitis on retreatment with the drug, were definite proof for the correctness of the opinion that this was due to stomatitis streptomycin.

CASE 2.—R.D., a 47 year old white man, was admitted to Montefiore Hospital on April 8, 1946. He had apparently been well until about fourteen months prior to admission, when nonradiating pain developed in the middle of the upper part of the back. A diagnosis of "rheumatism" was made, and then increasing pain and limitation of motion called for further investigation. A roentgenographic diagnosis of tuberculosis of the vertebra (Pott's disease) was made, and the patient was admitted to the orthopedic service.

His past history revealed no pulmonary infections, asthma, hay fever or urticaria. His father had asthma, of unknown causation, for thirty years.

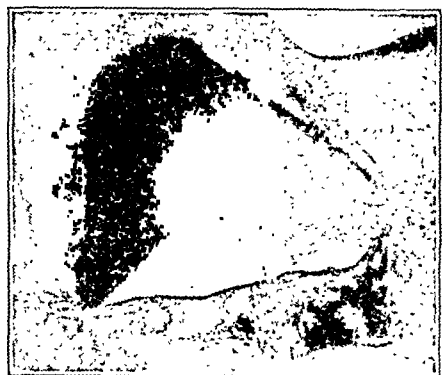
Physical examination revealed some tenderness to percussion in the region of the fifth to the seventh dorsal vertebrae. On admission a roentgenogram of his back showed a probable tuberculous abscess, involving the sixth and seventh dorsal vertebrae. On April 27, a body cast was applied, with unsatisfactory results. A Hibb's fusion was performed on May 10, followed by an uncomplicated postoperative course. On August 16, some thoracic pain developed, and the patient produced blood-streaked sputum containing acid-fast bacilli. Examination revealed bubbling rales in the lower half of the right lung field. A diagnosis was made of erosion of a tuberculous mediastinal lymph node into a bronchus, with post hemoptotic

From the Pulmonary Division, Montefiore Hospital, New York. The streptomycin was supplied by Merck & Co., Inc., Dr. J. M. Carlisle, Medical Director.

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spread. His pulmonary condition responded to bed rest, and recovery was uneventful until early March 1947, when an afebrile painless swelling of the left side of the scrotum developed. A diagnosis of tuberculous epididymitis was made, and on May 17 a rupture to the outside occurred, with the formation of a tuberculous scrotal sinus. On June 13, 1 Gm. of streptomycin daily, in six equal doses, was prescribed and was followed by gradual healing of the sinus.

On September 18, the patient complained of a feeling of tightness in his lips, mouth and throat, with some difficulty in swallowing. There was slight swelling of the mucous membranes of the mouth. Within two days an aphthous-like eruption developed, closely resembling that described in case 1 (the figure). Stomatitis due to streptomycin was suspected, and



Appearance of lesions on the third day of stomatitis, after the patient (case 2) had had 1 Gm. daily of streptomycin for ninety-four days.

treatment with the drug was discontinued on September 23. The dermatologist confirmed the resemblance of this stomatitis to that in case 1. A culture taken from an eroded lesion revealed *Staphylococcus albus* and *Streptococcus nonhemolyticus*; no fungi were present. The lesion had completely disappeared by October 3. Streptomycin was readministered on October 6, with the immediate subjective response of itching and tightness of the mouth. Within three hours slight swelling of the buccal mucous membrane was evident, and in twenty-four hours oral lesions like the lesion first noted had developed.

CASE 3.—S.S., a 50 year old white man, was transferred from Lebanon Hospital on Sept. 11, 1947, to Montefiore Hospital. Following pleurisy on the right side in 1937, a diagnosis of inactive minimal tuberculosis of the apex of the right lung was made. Roentgenologic studies and examinations of sputum were made at six month intervals, and for the first time, in January 1947, tubercle bacilli were seen in the sputum. Limited activity was prescribed until April, when, following a blow to his chest, substernal pain and shortness of breath developed. He sought no medical aid until July 2, when he was admitted to Lebanon Hospital with a diagnosis of coronary occlusion. The course of the disease was complicated by bilateral thrombophlebitis of the lower extremities and bilateral subdeltoid bursitis. On July 25, 2 Gm. of streptomycin daily were prescribed for his pulmonary infection. He had no untoward reactions until September 4, when dermatitis and painful stomatitis developed, but administration of the drug was continued until his admission to Montefiore Hospital.

Examination revealed a diffuse erythematous rash, with small reddish punctate papules. There were several small yellow vesicles in the mouth, predominantly on the inner aspect of the cheek and the vermillion border of the lower lip.

Because of the suspicion of dermatitis and stomatitis due to drugs, treatment with streptomycin was discontinued, and the lesions disappeared within a week. On September 17, 333 mg. of streptomycin were administered intramuscularly. Pruritus occurred immediately, and 50 mg. of tripeleannamine hydrochloride ("pyribenzamine hydrochloride") was given, with relief of the symptom. Following administration of a similar dose of streptomycin four hours later, generalized erythema developed, with a mild chill followed by a temperature of 103 F., and oral lesions developed, similar to those described in cases 1 and 2. After cessation of treatment there occurred gradual improvement of the stomatitis.

COMMENT

The pertinent data of our 3 cases are summarized in the table.

Summary of Data in 3 Cases

	Case 1	Case 2	Case 3
Dosage (Gm. daily)	1 and 2	1	2
Total dose (Gm.)	39	94	84
Institution of treatment	7/22/47	6/15/47	7/25/47
Occurrence of stomatitis	8/28/47	9/18/47	9/4/47
Duration of stomatitis (days)	14	15	13
Eosinophils (percentage)	10	6	8

The clinical picture presented in the 3 cases was identical: painful, erosive and membranous stomatitis, involving the entire oral mucous membrane as well as the undersurface of the tongue. Aside from the relatively mild cutaneous eruption in 2 cases there was no association of other toxic symptoms.

When the oral lesions were first noted and the bacteriologic examination revealed no significant pathogenic agent, the possibility of stomatitis due to streptomycin presented itself; treatment with the drug was discontinued, and the lesions disappeared within fourteen days. The diagnosis was not certain, however, until retreatment with the drug caused a rapid reappearance of the lesions.

While it appears that stomatitis was a late rather than an early reaction, it was not possible to correlate the lesions with such factors as the daily dosage, the total amount of streptomycin given or the duration of its administration.

SUMMARY

Three cases of severe erosive and membranous stomatitis are presented, which occurred during the administration of streptomycin for the treatment of pulmonary and extrapulmonary tuberculosis.

This lesion healed rapidly after treatment with the drug was discontinued.

The fact that the lesions reappeared promptly on resumption of treatment with streptomycin indicated that the stomatitis was caused by the antibiotic.

ACUTE EXFOLIATIVE DERMATITIS AND DEATH FOLLOWING PENICILLIN THERAPY

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and

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It is not within the scope of this paper to review in detail the various toxic reactions which result from penicillin sensitivity, as this information is readily available in any of the numerous publications on the subject, but rather to discuss a few of the more salient factors which should be borne in mind when one is called on to use this drug. Many reactions to penicillin or to the toxic impurities contained in individual batches of the extract have been described in the literature. Among these pruritus, urticaria, vesicular and bullous dermatitis, chills, fever, headaches and gastrointestinal disturbances have been particularly emphasized. Fortunately, none of these reactions are of such severity as to jeopardize the life of the patient. Whether the sensitizing agent in a particular instance is the active principle of penicillin or other substance in commercial penicillin capable of producing sensitization is not known, although it is generally conceded that the active principle of penicillin itself is the provocative agent.

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It is now a well established fact that persons who are allergic to penicillin may have a wide variety of toxic reactions. It is the purpose of this contribution to call attention to the more severe toxic effects of penicillin and report a case in which death followed its therapeutic administration. So far as our knowledge goes, no instance of death due to penicillin has been heretofore reported in the literature.

REPORT OF CASE

A. G., a white woman aged 72, was admitted to the Jewish Hospital because of pains in the right lower part of the abdomen diagnosed as acute appendicitis. At operation, a gangrenous and perforated appendix was found and removed. In addition, the peritoneal cavity was found to contain free, turbid fluid, which when cultured, yielded a nonhemolytic streptococcus. Because of the latter finding and as a safeguard against the spread of the peritoneal infection, she was given 400,000 units of penicillin daily in divided doses for eleven days. At the end of this time she recovered fully from the operation and was discharged from the hospital afebrile and feeling well; the wound of operation had completely healed.

Four days after her discharge from the hospital and seven days after the last injection of penicillin, the patient began to complain of a general body itch. This was soon followed by the appearance of a maculopapular eruption which covered almost the entire skin surface of the body. A punctate, erythematous eruption also appeared over the palate which was rather painful. The temperature rose to 102 F., the pulse rate was rapid and the patient appeared acutely ill. She was given adequate doses of diphenhydramine hydrochloride but with no beneficial effects. Within the next few days the rash became more pronounced and appeared confluent, first over the face, and later also, over the chest and the rest of the body. Diphenhydramine was then discontinued and triphenylamine hydrochloride was substituted, but again with no apparent improvement. The temperature continued to remain at a high level; she soon began to vomit and complain of abdominal pain and distention. She was then given "amytal" (N. N. R.) and ephedrine, but again with no alleviation of symptoms. The blood count showed 10,000 leukocytes, 76 per cent of which were polymorphonuclear leukocytes, 5 per cent eosinophils and the remainder lymphocytes.

The course of her illness was progressively in a downhill direction. Acute conjunctivitis developed with pronounced swelling and edema of the face. The mouth showed numerous small areas of ulceration covered with an adherent gray exudate. The skin over the face, and later also over the remainder of the body, began to exfoliate and presented a picture characteristic of acute exfoliative dermatitis. The lungs became congested, and a severe hacking cough developed which was most disturbing.

The patient was readmitted to the hospital acutely ill; she was stuporous and incontinent. Breathing was stertorous and the lungs considerably congested. Numerous moist rales could be heard almost over the entire chest. The body was covered with a homogeneous, fiery red rash with multiple areas of giant bullae; some of the latter had ruptured and discharged a clear, serous fluid. The clinical picture presented now by the patient was similar to that seen in cases of extensive second and third degree burns. For this reason the patient was given blood plasma alternating with 5 per cent dextrose solution intravenously, together with vitamin B complex, vitamin C and adrenal cortex extract. In spite of all medication, however, her condition grew steadily worse. The temperature began to spike at a high level, reaching a peak of 105 F. Many more skin blebs appeared, which soon ruptured, leaving behind large oozing surfaces. Also a generalized jaundice developed which became evident first over the sclera and later over the entire skin. Because of the pronounced swelling and ulcerations over the cubital veins, little blood could be obtained for detailed chemical studies. The blood urea was normal; the blood count and sedimentation tests showed no significant changes. The patient finally lapsed into a deep coma from which she could not be aroused; she died thirteen days after the first appearance of the toxic symptoms and the skin rash.

COMMENT

This case illustrates a severe type of reaction in a person who is allergic to penicillin. It is of interest to note in this

connection that 2 of her children who received injections of penicillin for therapeutic purposes were equally sensitive to the drug and showed a most violent reaction. They both had headaches, nausea, vomiting, giant urticaria and fever which lasted for a period of three weeks before the symptoms subsided. Evidently, there exists here a familial sensitivity to penicillin. Unfortunately, this fact was not known to us at the time that the patient was treated with penicillin or careful scratch tests would have been done to determine the sensitivity of the patient to this drug.

The clinical picture presented by this patient merits some detailed comment, though in many respects it followed the pattern previously described by many authors. An analysis of the various case reports recorded in the literature, and of our own case, demonstrates rather clearly that there exists a latent period between the time of administration of the drug and the first appearance of symptoms. This time interval is estimated to be about five to twenty-one days; it was seven days in the present case. The ill effects of penicillin first became evident with the development of a general pruritus and the appearance of a cutaneous rash. In this respect the disease simulates closely other allergic reactions with cutaneous manifestations. The rash is not distinctive in itself and may be a macular, papular, urticarial, vesicular or bullous dermatitis. The vesicles have a tendency to rupture and leave behind raw, weeping surfaces. Cases of severe exfoliative dermatitis have been reported, most of which do not last more than three weeks. In the case under discussion the disease assumed a most fulminating character, causing death within two weeks following its onset.

While the cutaneous lesions dominate the clinical picture, other visceral manifestations may develop in the course of the disease and assume great significance. Of the various visceral disturbances, those affecting the gastrointestinal tract and the liver have received special emphasis. Many of the patients complain of general malaise, nausea, vomiting and abdominal pains. There are still numerous gaps in our knowledge of the precise nature of the anatomic changes produced in these organs by the action of penicillin. Unfortunately, permission for autopsy was denied in our case and therefore the exact nature of the pathologic changes produced by the drug in the various organs could not be determined. One is therefore reduced to speculation regarding the mode of action of penicillin on the gastrointestinal tract and other viscera. From our knowledge of the action of other allergins it may be surmised that similar anatomic lesions are also produced in the case of penicillin sensitivity. In the case of the gastrointestinal tract these changes consist of edema of the wall and sometimes also ulceration of the mucosa.

The development of jaundice in the course of treatment with penicillin suggests a hepatic lesion probably in the nature of a toxic hepatitis. Howells and Kerns¹ reported 47 cases of hepatitis in patients who were given injections of penicillin for venereal infections. These authors were not certain, however, that the penicillin was the direct cause of hepatitis. It was thought that the lesion in the liver was due to some icterogenic agent such as a virus, which was transmitted to the patient through faulty injection technique. There is no doubt however, that in the case under discussion the hepatitis was a direct result of the penicillin, to which the patient was unduly sensitive.

There is still considerable discussion as to whether the active principle of penicillin is the sensitizing agent, or whether some other substance present in commercial penicillin is capable of producing sensitization. Most observers are of the opinion that the active principle of penicillin is the causative factor, and such proof has been offered through various scratch tests in the human being as well as animal experimentation. We are also inclined to believe that penicillin itself is the sensitizing agent, in view of the fact that similar toxic reactions were exhibited by 3 different members of the family, in whom different batches of penicillin were used.

The evidence now at hand seems to justify the conclusion that the haphazard use of penicillin is not devoid of risk. Fortunately, few patients react to the drug in a manner to lead to serious complications or to result in death. Most of the toxic

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Council on Foods and Nutrition

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JAMES R. WILSON, M.D., Secretary

CALORIC UNDERNUTRITION AND STARVATION, WITH NOTES ON PROTEIN DEFICIENCY

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1. INTRODUCTION

Justifiable enthusiasm about discoveries of specific nutrients and their metabolic consequence has distracted attention from the oldest problem in nutrition—simple caloric inadequacy. General undernutrition, with or without major deficiencies of individual nutrients, has always been widespread in the world at large; the tragedy of famine periodically emphasizes how slender is the margin of safety. In the United States and Canada food production has been so abundant for many years that the direct impact of famine is unknown; the consequences of food shortages elsewhere, however, increasingly demand attention and effort here. Moreover, the importance of secondary undernutrition in disease is beginning to be realized.

Caloric undernutrition has been generally assumed to involve a parallel protein deficiency in most cases. In Asia, the area of most frequently recurring famine, the diet is low in protein in the best of times. Any food shortage quickly reduces such sources of proteins as are usually available, and subsistence depends almost entirely on rice, tapioca and other foods which contain little protein. In Europe the protein in the typical famine diet is almost all of vegetable origin. In any case, the severely undernourished person is necessarily in a state of negative nitrogen balance so there is at least some of the effect of a protein deficiency. The present discussion includes some remarks on protein deficiency (sections 7, 8 and 9).

Practical questions about general undernutrition raised by World War II clearly revealed the undeveloped state of this area in the science of nutrition. Generalities about metabolic balance, normal weight for height, and optimal food intakes are of small help in evaluating the actual degree of caloric inadequacy, in predicting the consequences of a specific dietary level and in planning and operating programs of relief and rehabilitation. This is a field in which the contribution of animal experimentation is necessarily small; quantitative translation from animal to man is dubious at best and impossible in terms of behavior, intellectual functions, work performance and many details which have great medical and social significance. The residue of useful data on man himself is surprisingly meager but has been greatly augmented in the past few years.

2. SOURCE OF INFORMATION

Limitations of animal experiments have been men-

tioned; besides the interpretive difficulty, the actual evidence from studies on animals is not great. On man there is a plethora of general impressions and observations from famine areas; besides frequent deficiencies in technical measurement, these reports usually provide only a description of the famine victims without information about their prestarvation characteristics or satisfactory details as to the dietary intakes which produced their present condition. The same strictures may be made about the clinical literature on cachexia. From a vast literature, however, many common points emerge; for the most part these can only be incorporated, without specific citation, in the present summary.

Studies on a few fasting persons constitute the classic literature cited under "starvation" in the textbooks. Acute experiments with no food at all are of great interest, but they have only relatively remote bearing on the problems of chronic undernutrition and the real conditions of famine. Another question is whether the professional fasters and fanatics who have been studied are reasonable representatives of the general population.

There have been two major experiments on prolonged undernutrition in man. The Carnegie Institute experiment¹ provided much information from a group of young men who voluntarily submitted to underfeeding for several months; the degree of semistarvation was small, as indicated by weight losses of only the order of 10 per cent. In the Minnesota experiment 32 young men lost an average of 24 per cent of their body weight in six months; the total period of study lasted almost two years.²

There are no recent full-dress reviews of undernutrition and starvation, but several older works are still of great value: Porter³ for a first-hand account, with many autopsies, of famine in India; Lusk⁴ for the metabolic problems; Morgulis⁵ for a discussion from the point of view of the biologist, and Jackson⁶ for an exhaustive treatment of morphologic aspects. Several recent papers provide good general pictures. Leyton⁷ reported observations in a prisoner of war camp where there were some elements of scientific control. Data on weight changes and mortality of internees in France are valuable.⁸ Summaries of data on accidental persons starved in Japanese camps are available.⁹ Useful vital statistics and estimates of dietary intakes in periods of famine are provided for Holland¹⁰ and for Greece.¹¹ Data from the siege of Leningrad are interesting.¹²

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The present review is mainly an abstract of parts of a book, "The Biology of Human Starvation," which will be published by the University of Minnesota Press in 1948. The greatest single source of data is the Minnesota experiment (1944-1946). Both book and experiment are the joint works of Dr. Ancel Keys and Drs. Josef Brozek, Austin Henschel, Olaf Mickelsen and Henry Longstreet Taylor, with assistance on various phases by Miss Angie Mac Sturgeon and Drs. Samuel Wells and Ernst Simonson.

3. EUROPEAN AND ASIATIC FAMINE

The details of the effects of caloric undernutrition are modified by many factors, including particularly the previous state of nutrition, the character of the inadequate diet and the presence of intercurrent disease. In spite of individual and local variations, certain patterns seem to be characteristic of European countries on the one hand and Southeastern Asia on the other.

In the European countries, especially the northern and central regions, food shortages generally result in a diet dominated by whole or undermilled grains (mainly wheat), potatoes, turnips, cabbages and garden vegetables. The result frequently is a diet which is surprisingly good, qualitatively, and deficiencies in vitamins and minerals may not be prominent. The protein content is not vanishingly small and ordinarily comprises something like 10 per cent of the calories.

The diet in Asiatic famine tends to depend on starchy and fibrous foods, which are often exceedingly poor sources of proteins, vitamins and some minerals. The common frequency of endemic infections and infestations in Asia is exaggerated under famine conditions. The combinations of these debilitating conditions are endless, but those which most frequently modify the picture of simple caloric deficiency are hypoproteinemia, anemia, dysentery and deficiencies of some of the vitamins. Famine in Asia is attended by more severe edema and anemia and more frequent neuropathic conditions than in Europe. The present review cannot treat of these complications; it deals primarily with the simpler European type of undernutrition.

4. THE INCIDENCE OF GENERAL UNDERNUTRITION

A large incidence of general undernutrition seems to be an inevitable companion of national poverty, and this is chronically the state of affairs in most of Asia and large sections of Africa. Southeastern Europe, Central and South America. Until recently general undernutrition was frequently the lot of the underprivileged or economically unfortunate classes everywhere; crop failures or economic depression quickly resulted in semistarvation for the poor. In the United States this situation, never very pronounced, seems to have disappeared. In the great depression beginning in 1929 there was little caloric inadequacy and practically no starvation. In this country severe general undernutrition because of inability to obtain food does not exist except by peculiar accident for isolated persons; there is no reason to believe that this situation will change.

This does not mean that there is no general undernutrition in the United States. There are recluses, invalids, children and aged persons who are unable or unwilling to disclose their want and who may be missed by the proper governmental or charitable organization. Probably far more numerous are the persons who are generally undernourished because of the presence of disease. Anorexia of some degree is undoubtedly far more common than indicated by the rare cases diagnosed as anorexia nervosa or Simmonds' disease (hypopituitary cachexia). Undernutrition is prominent in the majority of patients with advanced neoplasms. Temporary undernutrition results from most severe infectious diseases and from major injuries and surgical operations.

The question of the incidence of caloric undernutrition in the general population has been raised by the results of some surveys of dietary intake. On the basis of one or another caloric yardstick, termed proper, ideal, adequate, recommended, optimal or required, comparisons are made with the estimated actual intake;

if the latter value is less than the theoretic standard the case is labeled caloric insufficiency. Thus Wiehl¹³ studied the diets of 1,080 aircraft workers and concluded that "the evidence is strong that a considerable number of these men were below a consumption level believed to be adequate." Further, this author commented on dietary surveys in Toronto, Ontario, and Halifax, Nova Scotia, Canada, to conclude that "it is not unusual for wage earners to eat a diet with less energy than is deemed desirable."¹⁴ The absurdity of conclusions derived from this approach is revealed by data on high school pupils.¹⁵ More than half (55.3 per cent) of these pupils were judged to be calorically undernourished, but analysis of the physical examination data shows that of these undernourished children only 11.1 per cent were underweight while 47.7 per cent of them were overweight by 7.5 per cent or more.¹⁶

5. CALORIC REQUIREMENTS AND RECOMMENDATIONS

The term caloric requirements is widely used, but so far has escaped precise definition, nor will this be attempted here. With any reasonable definition the requirement will be dependent on body size, age, sex, climate, occupation, personal habits, previous state of nutrition and perhaps race.

It is not possible to draw a fine line between caloric adequacy and general undernutrition, least of all by using the caloric intake alone as the criterion. In a given person caloric balance can be maintained over a rather wide range of body weight and caloric intake, and it is not now possible to conclude whether, in the long run, the optimal condition would be toward the upper or lower end of a range amounting to perhaps 10 per cent or more of the average body weight. Changes in body weights are a different matter, and a person not previously obese who loses 10 per cent or more in weight and continues to lose weight is clearly calorically deficient; roughly the same criterion may be applied to the averages for populations.

Various authorities (e.g., the League of Nations and the National Research Council) have made recommendations regarding caloric intake. These are useful in comparing populations and in planning food production; such validity as they have is that of broad averages, and their application to individuals is unwarranted. By and large, the caloric recommendations of the League of Nations and of the National Research Council may be rather higher than optimal. Slight to moderate decreases in per capita consumption below these recommendations in England and Switzerland in World War II and after were associated with evidences of better health. The role of changes in quality of food in these results is obscure, but certainly no adverse effect can be claimed from the caloric reductions. Fleisch¹⁷ concluded that instead of a required average of 2,400 Calories for sedentary adults, the experience of World War II showed an average intake of 2,160 Calories to be sufficient and even beneficial in Switzerland. In the United States careful studies on caloric intake reveal surprisingly low values in some instances where there is no clinical indication of inadequacy.¹⁸

13. Wiehl, D. G.: Nutritional Status of Aircraft Workers in Southern California: I. Diets of a Group of Aircraft Workers in South California, *Milbank Mem. Fund. Quart.* 20: 329-366, 1942.

14. Wiehl, D. G., p. 361.

15. Wiehl, D. G.: Medical Evaluation of Nutritional Status: XV. Caloric Intake of High School Students in New York City, *Milbank Mem. Fund. Quart.* 22: 5-10, 1944.

16. Keys, A.: The Refinement of Metabolic Calculations for Nutritional Purposes and the Problem of Availability, editorial, *J. Nutrition*, 29: 81-84, 1945.

17. Fleisch, A.: Ernährungsprobleme in Mangelzeiten: Die schweizerische Kriegsernährung, 1939-1946, Basel, Benno Schwabe & Co., 1947.

18. Winters, J. C., and Leslie, R. E.: A Study of the Diet of Twenty Women in a Moderate-Income Group, *J. Nutrition* 27: 185-192, 1944.

6. FASTING AND ACUTE STARVATION

Both fasting (total abstinence from food) and prolonged undernutrition result in many similar effects such as bradycardia, lowered metabolic rate, hypotension and weakness. But there are also obvious important differences; a few of these may be noted simply to emphasize the point that results in fasting experiments cannot be applied in any detail to problems of chronic undernutrition. Prolonged fasting has its intrinsic scientific interest, but it is rarely encountered in nature.

All reports on fasting are in agreement that the sense of hunger quickly disappears as the fast is continued. If the subject is sedentary, hunger is seldom disturbing after the third day and is usually entirely absent in a week. This loss of hunger is much accelerated by physical work. In experiments in the Laboratory of Physiological Hygiene fasting young men doing hard physical work lost the sensation of hunger in twenty-four hours and incipient nausea, with the attendant revulsion to food, was troublesome on the second or third days. This is in sharp contrast with undernutrition in which the sense of hunger progressively increases until it occupies a major part of the consciousness. Only near the termination with death from starvation does the condition change to resemble that in total fasting. Besides such differences in physical sensation, there are decided tendencies to differences in emotional state. Depression and apathy are almost universally observed in persons with severe undernutrition but in sedentary fasting euphoria and states of excitement are not uncommon.

It may be presumed that fasting is a greater, certainly a more abrupt, emergency and therefore a stronger stimulus to mobilize defense mechanisms in the body. This, together with the simple factor of time, may account for some differences in the blood chemistry compared with that in chronic undernutrition. The concentration of both erythrocytes and leukocytes in the blood of fasting persons tends to remain within relatively normal limits, though subject to variations from time to time. Simple undernutrition, however, tends to produce a leukopenia and a progressive anemia.

Perhaps the most striking differences between total and partial inanition are related to the differences in carbohydrate metabolism. Only a small supply of exogenous carbohydrate (which may be supplied also from exogenous protein) suffices to prevent ketosis. The amount required for this—of the order of 600 Calories per day—is usually obtained even in the worst conditions of famine. In any event, ketosis and ketonuria do not ordinarily appear in chronic undernutrition but pronounced ketosis develops in a few days of fasting. Associated with this difference in respect to ketosis are differences in the respiratory quotient, in acid-base balance and in the blood sugar level.

In the studies in the Laboratory of Physiological Hygiene there were observed interesting differences in the relative resistance of various functions to fasting on the one hand and to prolonged undernutrition on the other. For example, strength, as measured in single maximal exertions, is relatively resistant to fasting but is definitely reduced by prolonged underfeeding. In contrast, the coordination of movements is more strikingly reduced by fasting than by semistarvation.

7. PROTEIN DEFICIENCY AND REQUIREMENTS

Pure protein deficiency, with adequate calories and vitamins, is probably seldom encountered in nature, and little is known about it in man. That it retards or reverses growth and leads to hypoproteinemia and anemia is clear. In Asia it contributes to the picture

of famine edema and probably frequently complicates the decision as to whether there is a major deficiency of calories or thiamine. Protein deficiency will be considered here mainly as it may be associated with general undernutrition or may be confused with it.

Where caloric inadequacy exists the importance of the protein intake is dubious because the protein tends to be used as fuel in place of fat and carbohydrate and thereby is deprived of its ordinary important function. At exceedingly low levels of caloric intake—below 1,000 Calories daily for an adult—the substitution of protein for carbohydrate in the diet has practically no effect on the balance and the net nitrogen loss from the body continues. At higher but still inadequate levels of caloric intake it may be that dietary protein may spare some nitrogen loss, but the evidence is not fully satisfactory.

As in the case of calories, the concept of protein deficiency also involves consideration of protein requirements; presumably deficiency exists when requirements are not met. The situation is more complicated with proteins than with calories because there are several modifying factors. On the other hand, the criteria for establishing protein requirements are, at first glance, simpler and more objective.

In the growing animal it is customary to consider the least amount of protein which will allow the maximal rate of growth to be the requirement. Clearly this is the requirement for maximal growth, but for what else? Whether this level is optimal is an abstruse question which is seldom asked and which, actually, may be unanswerable without more precise definition. Optimal for what? In the case of animals the only values which are readily examined are size and appearance, physical health—meaning merely the absence of disease and defects—and longevity. The latter is infrequently considered, perhaps because the small evidence available points to an inverse correlation between rate of growth and eventual longevity. Numerous factors of great human value which may be affected by the level of protein nutrition are almost never considered, let alone evaluated.

In the adult the usual criterion for the protein requirement is the least intake level which will maintain nitrogen balance. In practice the method is more troublesome than in theory because of the tendency to spontaneous variation and the difficulty of obtaining exact balance. The expedient of measuring nitrogen excretion in fasting or on a protein-free diet is used to get a minimal estimate of the endogenous protein destruction, but this does not tell how much intake of a particular protein or protein mixture will result in nitrogen balance.

- Labile protein reserves (depot nitrogen) in the body are generally considered to be very small, and a sizable negative nitrogen balance for more than a day or two is taken to mean tissue depletion or destruction. But there are situations in which a negative nitrogen balance seems to be physiologic or at least difficult to avoid and perhaps harmless.

8. NITROGEN BALANCE AND PHYSICAL ACTIVITY

Protein catabolism is not increased in muscular exercise; the protein requirement is not altered by participation of protein in the direct energetics of physical activity. This does not mean that the nitrogen balance and requirement are independent of the activity in the long run.

In bed rest, which is the most frequently prescribed therapy in all forms of disease and injury, the nitrogen

balance quickly becomes negative on any ordinary diet and this occurs even in the absence of disease or injury; on the resumption of normal activity the nitrogen balance of the patient becomes positive. This phenomenon would seem to be a kind of disuse atrophy; probably most of the nitrogen lost comes from muscle cytoplasm and there may be no actual cellular destruction, at least at first. Similarly, chronic intensification of activity and muscular exercise calls for increased sarcoplasm and therefore nitrogen retention (exercise hypertrophy). It is puzzling, however, to find that even in bed rest and in the presence of situations that involve destruction of tissue there may be a positive nitrogen balance if the protein intake is forced to extremely high levels.¹⁹ Decreases in hemoglobin and plasma protein may occur in infections even when nitrogen retention is good.^{19a}

Somewhat similar difficulties arise from the fact that a definitely positive nitrogen balance in adults may be induced by some hormones, notably testosterone propionate. It is difficult to avoid the conclusion that the old discussion of protein reserves must be reopened. Since no specific reservoir of labile protein can be found, it may be suspected that the tissue cells in general have some nitrogen reserve and storage capacity.

In any case, the concept of protein requirements seems less simple and precise than might have been hoped. The optimal protein intake may be something else again, but there is little evidence as to quantitative relationships. The recommendations of many authorities, including the League of Nations and the National Research Council, tend to fix on 1 Gm. of protein per kilogram of body weight for adults. But in studies on young men doing hard work in the open no advantage was found for intakes greater than about two-thirds this amount, even when much of the protein was from vegetable sources.²⁰ This tends to be in agreement with recent careful studies on nitrogen balance, in which it was concluded that the National Research Council recommendation for a 70 Kg. man could be reduced to 50 Gm. and still provide approximately 30 per cent margin above requirements.²¹

The conclusions indicated in the preceding paragraph will be challenged by those who believe that neither crude nitrogen balance nor performance in normal health tell the whole story. Large excesses of protein intake have been suggested to be advantageous in building up reserves or antibodies, which may be called on to meet the emergencies of disease or injury. The evidence is still controversial except in the case of persons who have been in negative nitrogen balance and in whom a period of positive balance may be restorative. But elevated protein intakes are not clearly detrimental, though they are expensive, and will undoubtedly be recommended by many nutritionists to be "on the safe side."

9. PROTEIN QUALITY

Long ago animal feeding experiments with different individual proteins demonstrated differences in quality; the protein requirement was different for the several proteins. Some of the vegetable proteins were notably inferior to the animal proteins, and it became customary

to believe that a considerably greater intake of vegetable proteins was required as compared to animal proteins. Some of this difference could be traced to differences in digestibility and absorption, but more important discrepancies were related to metabolic utilization. It is now agreed that the last is dependent on the amino acid composition of the proteins. Inadequacy of one essential amino acid limits the synthesis of the tissue proteins which must contain it and thereby leaves excesses of the other amino acids which are then useless for this purpose. Accordingly, general protein deficiency may result from lack of a single amino acid.

In actual practice, that is, under the great majority of natural conditions, the importance of protein quality is much less than previously supposed. In ordinary diets, even of the vegetarian type, the protein moiety is made up of many different proteins and the chance that all of them will be low in one or more amino acids is small. On diets of limited variety, however, it is possible to have conditions like the earlier rat experiments in which substantially all the protein is supplied by a very few proteins. Such a condition may easily arise in famine areas; in such cases the provision of small amounts of foods rich in the missing amino acids may be highly beneficial.

An example of unsuspected amino acid deficiency and an interrelationship with a vitamin has recently emerged in pellagra. It now appears that pellagra may result from a deficiency in either tryptophane or nicotinic acid and may be successfully treated by either the amino acid or the vitamin.²² This means that the protein requirement may be altered by either its tryptophane content or by the amount of nicotinic acid in the diet. It is entirely possible that other similar relationships between amino acids and vitamins will be discovered. The protein requirement is certainly not an independent entity.

10. THE PROBLEM OF BODY WEIGHT AND FAT ✓

Caloric inadequacy produces a weight loss or a low level of weight for height. In practice, dependence in diagnosis is usually on the height-weight relationship; this means comparison with some set of standards. It is essential to recognize the derivation and limitations of such standards. Since there are as yet neither theoretic nor experimental bases for establishing ideal or optimal relationships between height and weight, recourse is had to averages of supposedly healthy groups which are taken as the standards. The body weight of a given person is then compared with the average of a group of healthy persons of the same sex, age and height. The difference between the individual and the group average is then expressed as pounds overweight or underweight. As an added refinement allowance may be made for body build or type, with standards being broken down into groups such as large frame and small frame. There is no agreement as to how these body types may be properly segregated.

Regardless of refinements of measurements and classification, all these standards involve some major uncertainties. First, the designation healthy in the reference group means only the absence of obvious disease and defect, and all persons in the reference group are presumed to be equally healthy, a presumption without basis and certainly false if it is admitted that health has gradations. Second, it is assumed implicitly that

19. (a) Spense, H. Y.; Evans, E. I., and Forbes, J. C.: The Influence of Special High Protein Diet on Protein Regeneration in the Surgical Patient, *Ann. Surg.* **124**: 131-141, 1946. (b) Howard, J. E., and others: Studies on Convalescence: Nitrogen and Mineral Balances During Starvation, and Graduated Feeding in Healthy Young Males at Bed Rest, *Bull. Johns Hopkins Hosp.* **78**: 282-307, 1946.

20. Darling, R. C.; Johnson, R. E.; Pitts, G. C.; Consolazio, F. C., and Robinson, P. F.: Effects of Variations in Dietary Protein on the Physical Well Being of Men Doing Manual Work, *J. Nutrition* **25**: 23-281, 1944.

21. Hegsted, D. M.; Tsongas, A. G.; Abbott, D. B., and Stare, F. J.: Protein Requirements of Adults, *J. Lab. & Clin. Med.* **31**: 261-284, 1946.

22. Krehl, W. A.; Teply, L. J.; Sarma, P. S., and Elvehjem, C. A.: Growth-Retarding Effect of Corn in Nicotinic Acid-Low Rations and Its Counteraction by Tryptophane, *Science* **101**: 489-490, 1945. Salmon, W. D.: Relation of Corn Products to the Requirement of the Rat for Dietary Nicotinic Acid, *J. Nutrition* **33**: 169-175, 1947.

the average somehow connotes the best; this is a nice democratic arrangement but scarcely scientific.

Presumably, the main concern in all examinations of height and weight is the proportion of the body represented by fat. In very emaciated and in very obese persons the principal difference is in the amount of fat, and this may be roughly gaged by the gross weight. Outside of these extremes, however—and it is precisely with less extreme cases that the real interest lies—the relation of fat to weight is far less exact.

The body fat may be estimated from its specific gravity, taking advantage of the low density of fat.²³ When this is done with a group of ordinary men, with no great extremes of emaciation or obesity, there is no correlation between true fatness and the degree of overweight or underweight calculated from height-weight tables.²⁴

11. WEIGHT LOSS IN UNDERNUTRITION

Reliable data on weight losses in famine and chronic undernutrition are remarkably few. The person who is semistarved against his will almost invariably overestimates his prestarvation weight and his weight loss. The same is often true of persons on reducing diets.

As noted previously, true ideal weights are not known and it is not possible to define precisely the level at which weight loss or departure from standard average becomes important. Probably deviations of less than 10 per cent below standard average weight-for-height are of small moment per se. On the other hand, a sudden weight loss of as much as 5 per cent may be significant. Weight losses of 10 per cent or more that are brought about in a few months in persons not previously obese involve definite impairment in endurance and working capacity and are associated with adverse changes in personality and emotional status.

In previously healthy young adults weight losses up to about 30 per cent can be tolerated with every prospect of eventual full return to normal with proper rehabilitation care. The lethal level is generally around a 40 per cent weight loss, though instances of losses of 50 per cent of weight, with recovery, have been recorded. In severe semistarvation the true weight loss may be difficult to estimate because of the presence of edema; the foregoing figures are for gross weight, including the ordinary amount of edema. When there are exceptionally pronounced edema and ascites, the lethal point may be reached with weight losses of only 20 to 30 per cent.

The rate at which weight is lost in undernutrition is of consequence. In general, it seems that the more rapid the weight loss the more serious is the disability at equal total weight losses. This is a point of both theoretic and practical interest which deserves special study. Allied to this problem is that of adaptive and compensatory phenomena in persons who are habitually underweight in comparison with ordinary standards.

12. MORPHOLOGY: BONES AND TEETH

The bony structures of the body are relatively resistant to caloric undernutrition. No adverse effect on the formed teeth has been objectively demonstrated in either acute or chronic starvation. The bones, however, are

not totally immune from change. Hunger or famine osteopathies have been reported many times in both European and Asiatic persons. Whether the affected individuals are peculiar in one or another respect or may only exhibit a more advanced state of a general tendency is not clear. It is probable that mild degrees of decalcification or other osteopathies are seldom recognized.

Droese²⁵ pointed out the confusion in the literature on the classification of the osteopathies associated with undernutrition but believed that hunger osteoporosis can be distinguished from hunger osteomalacia and late rickets. At the end of World War I a wide variety of osseous disorders were described from Central and Eastern Europe,²⁶ including delayed ossification in young women^{27a} and multiple spontaneous fractures.²⁷ All ages were represented, but the incidence was perhaps highest in elderly women.

In World War II osteopathies again were noted in Europe, the most frequently observed form being that in which there are areas of translucency in the cortex of the long bones and spontaneous fractures at points of mechanical strain.²⁸ Pompen and associates^{28b} described 24 cases of what they called "hunger osteopathy." They stated that in all cases the diet had been deficient in calcium, phosphorus, protein and vitamin D, and many of the patients had been indoors for long periods. Though undernourished, these patients were not really starved. This situation is radically different from that of the American prisoners of war in Japanese prison camps who showed roentgenologic evidence of osteoporosis on repatriation; these persons had ample exposure to the sun and frequently ate ground fish bones in prison.²⁹ Such evidence does not support a belief that either calcium or vitamin D deficiency is essential to the development of hunger osteopathy.

In the Minnesota experiment bone density was studied by Dr. Pauline Berry Mack with elaborate quantitative methods developed at Pennsylvania State College. Evidence of any abnormality in bone density was not seen. It seems probable that hunger osteopathies tend to develop only when the undernutrition is prolonged (for a year or more), and even then there must be other factors operative because the incidence never seems to be exceedingly high in famine populations.

13. MORPHOLOGY: MUSCULAR TISSUES

Muscular wasting is always a prominent feature of severe undernutrition. Experimental studies on animals indicate that, in general, the percentage weight loss of the voluntary muscles is somewhat greater than percentage weight loss of the entire body. Most of this wasting seems to be a result of shrinkage of the individual muscle fibers, but in late stages actual destruction of the cells may occur (Jackson,⁶ page 162). Brown atrophy, loss of cross striations and granular degeneration have been described, as well as a reduction in the liposomes (minute fat droplets) and occasional appearance of vacuoles.

Presumably, moderate undernutrition only affects

23. Behnke, A. R., Jr.; Feen, B. G., and Welham, W. C.: The Specific Gravity of Healthy Men: Body Weight Divided by Volume as an Index of Obesity, *J. A. M. A.* **118**: 495-498 (Feb. 14) 1942. Rathbun, E. N., and Pace, N.: Studies on Body Composition: I. The Determination of Total Body Fat by Means of the Body Specific Gravity, *J. Biol. Chem.* **158**: 667-676, 1945. Morales, M. F.; Rathbun, E. N.; Smith, R. E., and Pace, N.: Studies on Body Composition: II. Theoretical Considerations Regarding the Major Body Tissue Components, with Suggestions for Application to Man, *ibid.* **158**: 677-684, 1945.

24. Laboratory of Physiological Hygiene, University of Minnesota, unpublished studies.

25. Droese, W.: Beitrag zur Frage der senilen Osteomalazie und der Hungerosteopathie, *Arch. f. klin. u. exp. Med.* **170**: 1938.

26. (a) Boehme, J.: Die Osteopathien der Hungerosteopathie, *ibid.* **170**: 1938.

(b) Staunig, K.: Die Osteopathien der Hungerosteopathie, *ibid.* **170**: 1938.

Wien. klin. Wchnschr. **32**: 712-713, 1919.

27. Alwens: Ueber die Beziehungen der Unternehmung zur Osteoporose und Osteomalazie, *München. med. Wchnschr.* **66**: 1071-1075, 1919. Boehme.²⁶

28. (a) Burger, G. C. E.; Sandstead, H. R., and Drummond, J.: Starvation in Western Holland, *Lancet* **2**: 282-283, 1945. (b) Pompen, A. W. M.; La Chapelle, E. H.; Groen, J., and Merckx, K. P. M.: Hunger Osteomalacie in Nederland, Amsterdam, Wetenschappelijke Uitgeverij, 1946.

29. Hibbs, R. E.: Personal communication to the author.

the mass of sarcoplasm, at least for a time, and full recovery on refeeding should be possible. With more severe starvation, where muscle cells are undergoing actual destruction, it may be thought that full recovery could be brought about only by relative hypertrophy of the remaining intact muscle cells. However, mitoses in skeletal muscle of adult animals have been reported during ample feeding following starvation.³⁰

Contrary to the textbooks, heart muscle behaves much like skeletal muscle in starvation. In both acute and chronic undernutrition the heart shrinks in volume and in weight, the loss being nearly in proportion to the total weight loss of the body.³¹ In the Minnesota experiment the average gross volume of the heart, at systole, measured from teleroentgenkymograms, decreased 17 per cent when the body weight decreased 24 per cent. Since the starved heart may well eject its blood less completely than the normal heart, the actual tissue loss may be underestimated by this roentgenologic method, but in animals the weight loss of the heart is generally a trifle less than proportionate to the total weight loss.

The position of the heart in the chest is also changed in starvation so that ordinary linear measurements do not give an exact indication of the change in total size. In the Minnesota experiment the major axis of the heart in the standing position was, on the average, 4.4 degrees more vertical in starvation than in the control period.

14. MORPHOLOGY: BRAIN AND NERVOUS TISSUE

It has long been taught that the brain and the heart are somehow "protected" in starvation, so that they do not shrink and waste as do the other soft tissues of the body. In the case of the heart, as has been noted this view is in error. But all evidence is in agreement that the brain, and nervous tissue generally, loses little weight even in severe starvation. This does not necessarily mean, however, that these tissues are really unaffected by undernutrition. Histologic examination reveals atrophy, cloudy swelling, chromatolysis and a variety of degenerative changes in the cells.³² The explanation of the apparent paradox may be suggested by the general agreement that vacuoles and evidences of edema appear in the nervous tissue. Presumably the weight changes are limited because the gross structure is preserved with replacement of cytoplasm, or even of cells, by water. The changes in the spinal cord are similar to those in the brain and may be even more pronounced in the anterior horn cells.³³ Nor are the peripheral nerves immune to the effects of starvation, though the medullated fibers are only slightly affected, morphologically.⁶

15. SKIN, HAIR AND EYES

Caloric deficiency of more than slight degree tends to produce characteristic changes in the skin and hair, but these are not the same in all cases. The skin becomes thin, dry, and grayish. It is cold and "dead" to the touch and tends to slight cyanosis in cold weather. The appearance suggests old age. Besides these changes, which are generally seen and were striking in the men in the Minnesota experiment, there are other changes which appear with less regularity.

A substantial proportion of persons subsisting on a European type of famine diet exhibit rough gooseflesh-

like areas of skin, most often on the extensor surfaces of the thighs and upper arms. The condition resembles the follicular hyperkeratitis and folliculosis sometimes associated with vitamin A deficiency. The causation is puzzling because its incidence is highly variable and does not seem to be clearly related to the state of vitamin A nutrition.³⁴ This condition did not appear in the inmates of Japanese prison camps in spite of gross dietary deficiencies.³⁵

A remarkable peculiarity of the skin in starvation has escaped serious attention until recently. A splotchy, dirty brownish pigmentation, appearing anywhere on the body but most often seen on the face, was casually mentioned in some old reports on undernutrition but occasioned much surprise when it was frequently seen at the close of World War II.³⁶ Most of the Minnesota men exhibited it to some degree. The mechanism of the production of this famine pigmentation is unknown; it is not related to nicotinic acid deficiency or pellagra.

The hair in starvation is usually dry, dull and starting. There are many impressions that hair almost ceases to grow and tends to fall out, but objective evidence is lacking.

There is a characteristic appearance of the eyes in starved persons. They look dull and dead. On closer inspection it is seen that the sclera and cornea are unusually devoid of blood vessels so that the whites of the eyes resemble unglazed porcelain. In the Minnesota experiment men even soap solution failed to produce reddening.

16. MORPHOLOGY: BLOOD VOLUME

With the exception of bone and nervous tissues, the formed tissues of the body generally are decidedly diminished in gross bulk in undernutrition. In some respects it is proper to consider the blood as a tissue, and its behavior in comparison with other tissues is of interest. More particularly, it is essential to allow for changes in the gross mass of the blood before evaluating the true meaning of changes in the concentration of the formed elements.

Measurements of the blood volume in relation to the nutritional state are still few in number, and some limitations in the technical methods restrict the conclusions which may be drawn from the data. All present methods refer only to the circulating blood. Although in man the reservoirs of noncirculating blood are small, it is possible that the situation may not be precisely the same in normal and in starved persons. Moreover, when starved and normal persons are compared there is the question as to how the blood volume should be expressed to allow properly for differences in gross body size.

Plasma volume was estimated in 15 inmates of the Belsen concentration camp who had lost something like 30 or 35 per cent of their body weight.³⁶ In the Minnesota experiment the plasma volume was studied systematically before, during and after starvation.³⁶ As far as they go, the Belsen data confirm the Minnesota work. Before starvation the Minnesota subjects had an average plasma volume of 3.15 liters, and this amounted to 45.3 cc. per kilogram of body weight. At the end of six months of semistarvation the absolute

30. Jackson,⁶ p. 167.

31. Keys, A.; Henschel, A., and Taylor, H. L.: The Size and Function of the Human Heart at Rest in Semi-Starvation and in Subsequent Rehabilitation, *Am. J. Physiol.* **150**: 153-169, 1947.

32. Jackson,⁶ p. 181.

33. Jackson,⁶ p. 195.

34. Robinson, W. D.; Janney, J. H., and Grande, F. C.: An Evaluation of the Nutritional Status of a Population Group in Madrid, Spain, During the Summer of 1941, *J. Nutrition* **24**: 557-584, 1942.

35. Mollison, P. L.: Observation on Cases of Starvation at Belsen, *Brit. J.* **1**: 4-8, 1946.

36. Henschel, A.; Mickelsen, O.; Taylor, H. L., and Keys, A.: Plasma Volume and Thiocyanate Space in Famine and Recovery, *Am. J. Physiol.* **150**: 170-180, 1947.

plasma volume had increased slightly to an average of 3.41 liters, but this then represented 59.3 cc. per kilogram of the total body weight.

The absolute plasma volume, then, tends to remain constant or increases slightly in starvation. The associated anemia means that the total circulating blood volume is somewhat reduced, but in proportion to the body weight there is a definite blood plethora. These changes are slowly reversed in subsequent rehabilitation; the Minnesota men were fully restored in this respect in about three months.

The behavior of the blood volume in the terminal stages of the most severe starvation may be more complex. Some famine victims die in obvious shock with all signs of severe dehydration; the persistent diarrhea often seen in these cases may produce dehydration, sharp reduction in blood volume and shock as in cholera.

17. MORPHOLOGY: BLOOD CELLS

Some degree of anemia is invariably observed in persons who have undergone prolonged semistarvation. In Asia severe anemia is frequently seen in such persons, but this is probably mainly a reflection of the effect of malaria and other blood-destructive conditions.

In the Minnesota experiment the diet, like European famine diets, was not deficient in iron but there was a progressive moderate anemia in every man during semistarvation. Beginning with an average of 15.1 ± 0.88 Gm. per hundred cubic centimeters of blood in the control period, the average value declined to 12.6 ± 0.80 Gm. after 12 weeks of semistarvation (15 per cent weight loss) and to 11.7 ± 0.80 Gm. at 24 weeks when the weight loss was 24 per cent.³⁸ These changes are comparable to many observations in famine areas in Europe.

In general, the erythrocyte count and the hematocrit reading change as does the hemoglobin concentration, but the parallelism is not exact. The red blood cells tend to become slightly larger in starvation; the anemia is of the macrocytic type. In the Minnesota experiment the average volume of the red cell, and the content of hemoglobin in it, had increased about 7 per cent at the end of semistarvation.

From the data on plasma volume, the hematocrit reading and the hemoglobin concentration, the total circulating hemoglobin can be calculated. In starvation this is decreased, the decrease in the Minnesota experiment being almost exactly in proportion to the decrease in gross body weight.³⁹

The cause of the anemia in undernutrition is not clear; iron deficiency is not primarily responsible. Sternal marrow examinations so far have not provided the answer. Increased, decreased and normal degrees of erythropoiesis have been found in the marrows of anemic starving persons. The possibility that excessive peripheral destruction of the red blood cells is involved is suggested by reports of hemosiderin deposits in the tissue.³⁷

In comparison with the rather large variability of leukocytes in normal subjects, the changes in starvation are ordinarily not dramatic. A definite but moderate leukopenia is the rule except where there is intercurrent infection. In the Minnesota experiment the mean leukocyte count was 6,346 per cubic millimeter in the control period and at the end of semistarvation it was 4,129, a decline of 34.9 per cent (see also Zimmer⁴⁰).

Correcting for the change in total blood volume, the decrease in total circulating leukocytes averaged 24.1 per cent.

The composition of the leukocytes by types in semistarvation and in fasting has been reported many times in the older literature, but no consistent picture emerges. Several workers found an apparent relative lymphocytosis,³⁸ but this was not observed in the Minnesota experiment.

In rehabilitation following prolonged undernutrition the correction of the anemia takes place slowly even when protein and iron are supplied in abundance. In the Minnesota experiment the hemoglobin concentration only recovered slightly in 12 weeks and was still appreciably below the control values at 20 weeks when the body weight had been regained; 3 months later, however, (i.e., a total of 8 months after the end of semistarvation), the blood was normal.

18. THE GASTROINTESTINAL TRACT

Gastrointestinal disorders are almost invariably reported from famine areas and frequently contribute greatly to the disability and death of famine victims. Diarrhea and dysentery are always major factors in famine mortality in India,³⁹ and were prevalent in Europe in both World Wars.⁴⁰ The majority of internees and prisoners of war in the Japanese camps in World War II suffered from diarrhea.³⁹ In such situations, however, there is a breakdown of sanitation or recourse to strange and peculiar materials as food, or both, so that it is impossible to assess the effects of undernutrition as such.

Attempts to isolate specific pathogens from the stools in most of these cases have been conspicuously unsuccessful. If organisms in the intestine are responsible it must be concluded that forms which normally are not pathogenic may interfere with the function of the intestine of the starving man. Famine victims usually eat anything and everything they can get, and this often means the consumption of irritating, indigestible and spoiled foods, so that nonspecific diarrhea would not be surprising except for its severity.

In the Minnesota experiment, in which strict sanitation was maintained and bad or questionable items of food were never used, diarrhea did not occur at any time though the degree of starvation was comparable to that in the field where diarrhea is so pronounced. This would seem to prove that starvation alone is not causative.

Extreme pathologic changes are often found in the intestinal mucosa of famine victims. These changes may explain the diarrhea in a sense, but the tissue changes are probably the resultant of several factors, of which caloric undernutrition is only one. Certainly starvation produces degenerative changes in all the tissues of the gastrointestinal tract as elsewhere in the body. Additional insult may then easily produce a variety of disorders. An increase in peptic ulcer is commonly noted in periods of undernutrition.⁴¹

The course of the digestion as affected by starvation is an important question in devising relief programs. In the spring of 1945 it was at first thought that many

37. Lubarsch, cited by Luisada, A.: Beitrag zur Pathogenese und Therapie des Lungenödems und des Asthma cordial, Arch. f. exper. Path. u. Pharmacol. 132: 313-329, 1928.

38. Bigland, A. D.: Oedema as a Symptom in So-Called Deiciency Diseases, Lancet 1: 243-247, 1920. Benedict, Miles, Roth and Smith.

39. Aykroyd, W. R.: Nutrition and Health, Indian M. Rec. 59: 113-116, 1939. Porter.³

40. Delbray, C.; Zaracovich, M.; Ranson, B.; Jacquemin, J.; Robert, G., and Siraga, M.: Contribution à l'étude de la pathologie des déportés, Semaine d. hôp. de Paris 22: 863-870, 1946. Brozek, Wells and Keys.²

41. Magee, H. E.: Application of Nutrition to Public Health: Some Lessons of the War, Brit. M. J. 1: 475-486, 1946.

famine victims in Europe would require intravenous alimentation, but this proved undesirable in trials in the Netherlands and later in the Belsen concentration camp. Frequent feedings of easily digested foods usually bring about rapid improvement; when this is not the case even the most careful intravenous management may be unsuccessful. The critical point may be indicated by dysphagia. If the patient still feels the pangs of hunger and wants to eat, even a rough and ready feeding program with plain foods will suffice; if the appetite is gone the prognosis is bad (except in anorexia nervosa).

In the Minnesota experiment there were few indications of digestive impairment and no complaints on this score. Gastric acidity (fasting and after histamine) was substantially normal. Gastric motility (rate of evacuation of a test meal) was slightly but consistently depressed.

19. THE BASAL METABOLIC RATE

The basal metabolic rate always represents a large fraction of the total metabolism so that its relation to the caloric intake is a major determinant in the caloric balance. Under normal conditions the basal metabolic rate of the individual is relatively fixed and differences between persons of the same age and sex are considered to be dependent on body size and on the activity of the thyroid gland. It is generally believed that habitual differences in food intake and relative obesity in normal persons have little or no effect on the basal metabolic rate. Persons who are habitually thin, even to a decided degree, apparently have a normal basal metabolic rate when this is expressed per unit of body surface.⁴²

When the food intake is sharply reduced below the habitual level for the subject the basal oxygen consumption promptly declines, and this alteration tends to be progressive if the inadequate diet is continued: the absolute change is large. The 32 men in the Minnesota experiment had an average basal consumption of 229 cc. per minute before starvation. After 12 weeks of the famine diet, when the body weight had fallen 15 per cent, this had decreased to 155 cc. and after 24 weeks the average was 139 cc. per minute; a loss of 24 per cent in body weight was associated with a drop of 39 per cent in the basal oxygen consumption. These data, which extend and confirm earlier results, are of obvious practical significance. When subsistence is maintained at a calorically deficient level the progress of the undernutrition itself progressively decreases the caloric deficit so that there is a tendency toward adaptation or compensation.

The absolute changes in the basal metabolism raise questions about the mechanisms involved and the intensity and character of the metabolic processes in the metabolizing tissues. These changes are not merely a reflection of changes in the body surface which would be predicted from the so-called surface law. In the Minnesota experiment, for example, there was an average drop of 28 per cent in the oxygen consumption per square meter of body surface. Subnormal values for the basal metabolic rate, expressed in units of body surface, are universally found in famine areas.

Analysis of these data suggests the need for renewed scrutiny of the surface law. As the body shrinks in starvation the surface increases relative to the tissue mass so that, other things being equal, there would

be a greater heat loss and a lower point of temperature equilibrium. The lowered body temperature in turn would retard the enzymatic processes which constitute the metabolism. Although such a chain of events undoubtedly operates, it is not possible to explain the total metabolic alterations on this basis. The decline in body temperature is exceedingly small; in the Minnesota experiment it fell less than 1 degree (F.) in 24 weeks. As a matter of fact, the theory of a heat exchange basis for the surface law is no longer seriously entertained. Changes in peripheral blood circulation readily control the body temperature in the face of great changes in heat production and external temperature.

An important problem is the behavior of the metabolic rate per unit of metabolizing tissue. A first approximation is obtained by expressing the metabolic rate in relation to gross body weight. In the Minnesota experiment the basal oxygen consumption per kilogram of body weight declined 15 per cent in semistarvation. But the gross body weight is not necessarily a reliable index of metabolizing tissue. Fat, bone mineral and extracellular water clearly have little or no metabolic activity. In starvation the proportional composition of the body is changed, there being a relative reduction in fat and relative increases in bone mineral and extracellular water. When allowance is made for these differences, which is possible with the Minnesota data, the apparent alteration in metabolic intensity is reduced but the values are still about 10 per cent below the pre-starvation control. In other words, prolonged severe undernutrition produces a small but seemingly significant drop in the basal metabolic rate per unit weight of active tissue (body weight less weights of fat, bone mineral and extracellular water).

In rehabilitation following undernutrition the basal metabolic rate rises more or less parallel to the dietary intake and the gain in body weight. Before body weight is fully restored, however, and for some weeks or months thereafter, the basal metabolic rate surpasses the value which was characteristic of the subject in the prestarvation state. This is particularly clear when the basal metabolic rate is expressed per unit of active tissue or per unit of body weight less fat. In the latter terms the average for the men in the Minnesota experiment after 20 weeks of refeeding, when body weight had been restored, was 13 per cent above their own normal metabolic rates.

20. TOTAL ENERGY METABOLISM

The total energy metabolism is made up of the basal metabolic rate, the specific dynamic action (some 10 per cent of the basal metabolic rate), and the cost of muscular movement and tonus in excess of the basal state. In starvation or severe undernutrition the basal metabolic rate is sharply diminished, as previously noted. Presumably there is also a proportional reduction in the specific dynamic action. The other items in the total metabolic picture are also much reduced.

The energetic efficiency of muscular activity is substantially unaltered in undernutrition except in the most extreme states where gross incoordination may interfere. The energy cost per kilogrammeter of external work like walking and bicycle riding is practically unaltered. This simplifies the analysis.

A large part of the energy cost of muscular work is entailed by moving the body or its parts. In locomotion the work done is simply proportional to the body weight. It follows, then, that the metabolic cost of muscular work is reduced in starvation because of the

42. Blunt, K.; Nelson, A., and Oleson, H. C.: The Basal Metabolism of Underweight Children, *J. Biol. Chem.*, 49: 247-262, 1921. Strang, J. M.; McCluggage, H. B., and Brownlee, M. A.: Metabolism in Undernutrition: Its Changes During Treatment by High Caloric Diet, *Arch. Int. Med.* 55: 958-978 (June) 1935.

reduction in weight of the body and its movable parts. For the majority of activities the reduction in work energy may be considered roughly proportional to the loss in body weight.

Perhaps even more important in most natural life situations is the fact that voluntary activity is greatly diminished in severe undernutrition. Energy expenditure is automatically curtailed and the starving man tends to be immobile, to move slowly when movement is necessary and to assume postures which are most conservative of energy.

The combined effect of all these factors is a large reduction in energy expenditure. In the Minnesota experiment the daily total energy expenditure at the end of semistarvation was only about half that in the control period, in spite of the fact that a fixed occupational and exercise program was maintained throughout. In severe natural famine the reduction in energy expenditure may be considerably greater, so that caloric balance may be achieved at surprisingly low figures. The caloric deficit is apt to be grossly overestimated when calculated simply from caloric intakes.

During nutritional rehabilitation the return of a sense of well-being is coupled with an increase in voluntary physical activity, but the habit of energy conservation is not quickly broken. An effort of will or coercion is often necessary to promote recovery in physical fitness by exercise. The total daily metabolism tends to lag behind the proportional change in the basal metabolic rate in recovery.

21. THE CARDIOVASCULAR SYSTEM

The response of the cardiac musculature to undernutrition has been mentioned in section 13. Changes in cardiac and circulatory function are obvious and in some respects more dramatic.⁴¹ It is well known that both total fasting and prolonged undernutrition tend to produce bradycardia and hypotension in rest. The significance of these changes and other details of circulatory function have received little attention until recently.

Starvation bradycardia is obvious in all instances except where there are extremely powerful heart-accelerating forces at work, such as systemic infection, great excitement or fear, or impending circulatory collapse. From the literature the impression is gained that the bradycardia is perhaps most profound in the earlier stages of severe undernutrition; certainly the degree of bradycardia is not simply related to weight loss. This was also indicated in the Minnesota experiment where the subjects' average basal pulse rate of 34.9 per minute after 12 weeks rose to 37.8 after 24 weeks of semistarvation.

The contrast with beri-beri heart is important. In beri-beri, there may be resting bradycardia but small physical exertion produces decided tachycardia. In simple starvation, exercise produces an increase in the heart rate but this is not disproportionate to the resting rate.

The bradycardia of starvation does not involve heart block; the rhythm is of the sinus type.⁴² The rhythm is remarkable for its great regularity; the variability of the length of the P-R interval is smaller than normal in both absolute and relative terms. The electrocardiogram in a state of severe undernutrition shows peculiarities in almost every item of measurement,^{43b} but the amplitude changes are most striking. The voltages of

all deflections are reduced, particularly the P waves and the QRS complex.

Both systolic and diastolic blood pressures are reduced by undernutrition but these changes, unlike the bradycardia, are moderate and progressive. In severe chronic undernutrition the systolic blood pressure is generally reduced 10 to 30 mm., with a smaller drop in diastolic pressure; the pulse pressure is invariably narrower.⁴¹ These changes have interesting relations to problems of hypertension.⁴⁴

The total circulatory function in starvation is, superficially at least, well preserved. Though there is a tendency to slight peripheral cyanosis, there are usually no complaints referred to the heart and no signs of impending or actual failure except in the terminal state. Nevertheless, detailed analysis indicates that the margin of safety is reduced and that the rate of circulation per unit of metabolic rate is substantially lowered.⁴¹

In starvation it is common to observe fainting and giddiness, particularly in the upright posture. It is surprising, therefore, to note that no inadequacy of circulatory adjustment to posture is revealed by tilt-table tests.⁴⁵

The restoration of cardiocirculatory function to normal by refeeding does not necessarily follow a simple path of reversal of the starvation changes. When the rehabilitation diet is abundant there may appear signs of relative cardiac insufficiency at the time when the rate of gain of weight and of the basal metabolic rate are at their peaks. The pulse rate, in both rest and exercise, and the venous pressure tend to exceed normal control values, and even frank congestive failure may intervene.⁴¹ The sudden rise in the basal metabolic rate in rehabilitation may produce an intolerable strain on the heart. Full restoration of the heart is not as readily achieved as is the body weight.

22. STRENGTH AND COORDINATION

All psychomotor functions deteriorate in caloric deficiency, and the result is a serious impairment in working capacity. Simple muscular strength, as measured in a single maximal exertion, declines steadily but not as dramatically as does the capacity for continued muscular exertions (endurance). In the Minnesota experiment the single-effort strength of hands, arms and back declined about 30 per cent and the endurance in severe work which produces exhaustion in a few minutes fell as much as 85 per cent. Collapse in the latter tests appeared to be due to muscular failure instead of the circulatory-respiratory type seen in normal persons.

Neuromuscular coordination is impaired by caloric undernutrition, but the relative deterioration is less than in purely muscular capacity.

The psychomotor functions are only slowly restored by refeeding. When the body weight has been regained, there may still persist a serious reduction in muscular endurance. In young men full recovery in these respects takes the better part of a year.

23. THE SPECIAL SENSES

Simple caloric starvation seems to have no deleterious effects on the special senses. In the Minnesota experiment visual acuity was unaffected and there was no evidence of alteration in the senses of touch, taste and smell. Auditory acuity is ordinarily slightly improved

43. (a) Cardozo, E. L., and Eggink, P.: Circulation Failure in Hunger Edema, *Canad. M. A. J.* 54: 145-147, 1946. (b) Simonson, E.; Henschel, A., and Keys, A.: The Electrocardiogram of Man in Semi-Starvation and Subsequent Rehabilitation, *Am. Heart J.*, 35: 584-602, 1948.

44. Brozek, J.; Chapman, C. B., and Keys, A.: The Effect of Semi-starvation on Cardiovascular Dynamics in Normotensive and Hypertensive Persons, *J. A. M. A.*, to be published.

45. Taylor, H. L.; Henschel, A., and Keys, A.: The Cardiovascular Response to Posture and the Problem of Faintness and Syncope in the Semi-Starved Individual, *Am. J. Physiol.* 152: 141-149, 1948.

at all frequencies; this was clearly demonstrated in the Minnesota subjects and is confirmed by less objective methods from famine areas. The cause of the sharpened hearing may be mechanical, associated with an enlargement of the free space in the auditory canal. The improvement in hearing is lost during nutritional rehabilitation.

24. INTELLECTIVE FUNCTIONS

Starving persons are ordinarily averse to any effort, including that of the intellect, and their preoccupation with food and their own plight may give an impression of stupidity or mental incapacity. Actually, however, there is no evidence for a decline in basic intellectual capacity. In the Minnesota experiment exhaustive studies on memory, reasoning power, verbal and arithmetical facility, and so on, revealed no changes in spite of the subjective impression of most of the men that their mental powers had been reduced.

25. PERSONALITY AND EMOTION

Severe caloric inadequacy produces profound changes in the personality and the subjective state.⁴⁶ Externally, the major characteristics are apathy, depression and introversion. Social contacts are avoided and sex interest declines sharply. Psychiatric methods reveal, besides the depression, a well defined rise in the tendencies to hypochondriasis and hysteria. Though the behavior is almost never aggressive, it is easy to discern a tendency to a heightened irritability. The behavior which would ordinarily be associated with increased irritability is suppressed by the overwhelming physical lethargy.

It is difficult to appreciate the enormous preoccupation of the starving man with food and eating. His thoughts tend to be exclusively dominated with these concerns. Their expression may range from constant day-dreaming about eating to extensions such as interest in scientific agriculture. Niceties of behavior are brushed aside where they interfere with the full expression of these interests. Even when the food supply is restored the concern about food persists for many months; a common expression is food hoarding, even when there is not the slightest reasonable basis for this.

Emotional crises and seriously disturbed behavior may arise from the conflict between the concentration on food and previously fixed convictions.^{46b} While these may result in irritated or antisocial behavior or even lead to self-destructive impulses, they do not partake of the character of the true psychoses.

Personality changes in refeeding may be even more complex; certainly the behavior may be more variable. As the physical state improves the tendencies toward depression and hypochondriasis diminish, but they may be returned in force by disappointment in the rate of recovery or threats of renewed food restrictions. The return of physical vigor allows outward manifestation of formerly suppressed irritability. At this stage these persons are far more difficult to manage and maintain in an orderly social structure than when they were physically deteriorating. These facts obviously have great sociologic importance.

26. UNDERNUTRITION AND RESISTANCE TO INFECTION

There is no aspect of undernutrition about which there is a more fixed common belief—and less objective evidence—than the question of the effect on resistance to infection. The historical association of famine and pestilence has been so uncritically accepted as indicat-

ing cause and effect that there is a dearth of actual research and analysis. The whole problem of nutrition and infection is enormously complicated;⁴⁷ obviously no broad generalizations are possible.

Properly, each infectious disease should be considered separately. However, only in the case of tuberculosis is there an appreciable amount of acceptable information. Tuberculosis is discussed separately (section 27); here the other problems are noted briefly. The evidence, such as it is, concerns: (1) indirect suggestions from antibody titers, precipitins, gamma globulin and the like; (2) animal experiments involving experimental infection; (3) casual observations on natural infections in animals; (4) clinical reports, and (5) morbidity and mortality data from famine areas.

A long series of papers from Dr. Paul Cannon's laboratory has stressed the importance of nutrition, particularly protein nutrition, in antibody formation.⁴⁸ Most of these animal experiments involved both severe caloric and protein deficiencies, the latter being more drastic than usually seen even in severe famine. The exact relevance of these observations to human caloric deficiency is uncertain; the data themselves are contrary to some older studies.⁴⁹

Experimental studies with injections of micro-organisms into animals in various states of nutrition have been few and of indifferent quality. Opposing observations make it clear that no general conclusions are possible so far (e.g., Edwards⁵⁰ versus Robertson and Tisdall⁵¹). Reports on the incidence and course of natural infections in underfed animals are similarly at variance.⁵²

Clinical records may be used to support or to oppose the claim that caloric deficiency, per se, produces a decreased resistance to infection. Some interesting recent data have to do with clinical experience in hospitals associated with prison camps in World War II where surgical procedures were often performed on persons in a deplorable nutritional state without unusual complications.⁵³

Morbidity and mortality records from World War II provide material for thought. In contradistinction to previous wars, pestilence was never rampant except where sanitation control was neglected. No epidemics appeared in Western Holland or Greece at the times when there was mass starvation in those areas. The diphtheria epidemic of 1946 appeared to affect the American occupation troops just as severely as the underfed populace. Markowski⁵⁴ stated that typhus mortality was worse among the German guards than among the starving Russian prisoners at Hammerstein.

46. (a) Franklin, J. C.; Schiele, B. C.; Brozek, J., and Keys, A.: Observations in Human Behavior in Experimental Semi-Starvation and Rehabilitation, *J. Clin. Psychol.* 4: 28-35, 1948. (b) Schiele, B. C., and Brozek, J.: Experimental Neurosis Resulting from Semi-Starvation in Man, *Psychosom. Med.*, 10: 31-50, 1948.

47. Schneider, H. A.: Nutrition and Infection, the Strategic Situation, in Harris, R. W., and Thimann, K. V.: Vitamins and Hormones, New York, Academic Press, Inc., 1946, vol. 4, pp. 35-70.

48. Cannon, P. R.; Wissler, R. W.; Woolridge, R. L., and Benditt, E. P.: The Relationship of Protein Deficiency to Surgical Infection, *Ann. Surg.* 120: 514-525, 1944. Cannon, P. R.: The Importance of Proteins in Resistance to Infection, *J. A. M. A.* 128: 360-362 (June 2) 1945; The Relationship of Protein Metabolism to Antibody Production and Resistance to Infection, in Anson, M. L., and Edsall, J. T.: Advances in Protein Chemistry, New York, Academic Press, Inc., 1946, pp. 135-154.

49. Zilva, S. S.: The Influence of Deficient Nutrition on the Production of Agglutinins, Complement and Amboceptor, *Biochem. J.* 13: 172-194, 1919.

50. Edwards, J. T.: Discussion on Nutrition and Its Effects on Infectious Disease, *Proc. Roy. Soc. Med.* 30: 1046-1051, 1937.

51. Robertson, E. C., and Tisdall, F. F.: Nutrition and Resistance to Disease, *Canad. M. A. J.* 40: 282-284, 1939.

52. McCay, C. M.: Nutrition, Ageing and Longevity, *Tr. & Stud., Coll. Physicians Philadelphia* 10: 1-10, 1942.

53. Gottlieb, M. L.: Impressions of a POW Medical Officer in a Japanese Concentration Camp, *U. S. Nav. M. Bull.* 46: 663-675, 1946.

54. Markowski, B.: Some Experiences of a Medical Prisoner of War, *Brit. M. J.* 2: 361-363, 1945.

On the whole, the evidence to date suggests that there are various relations in different animals and with different organisms, that the old association of famine and pestilence was largely due to sanitary faults and that in man caloric deficiency is not necessarily productive of a lowered resistance or a heightened susceptibility to infectious diseases in general.

27. TUBERCULOSIS

As far into the past as there are records it is clear that tuberculosis has always increased in periods of severe food restriction. The evidence for the period of the first World War is particularly valuable because it is possible in some cases to dissociate the factor of food shortage from those of overcrowding, excessive labor, sanitation and medical care. The data from Germany⁵⁵ are useful, but the analysis of Faber⁵⁶ for the situation in Denmark is most significant.

Denmark's domestic food consumption in World War I decreased and then increased owing to the blockade. The housing situation became extremely bad after the food supply was maintained at a good level. Medical care was well maintained at all times. Sharp changes in tuberculosis mortality were closely related to the level of food consumption and were relatively independent of overcrowding, unemployment and the like.

The data from World War II are adding much confirmation to the conclusion that tuberculosis morbidity and mortality are increased by caloric deficiency.⁵⁷ In some cases changes in ascertainment distort the figures,⁴¹ but the general picture is convincing. Clinical reports from areas of food shortages emphasize the frequency of a fulminating type of the disease. Tuberculosis is certainly a most serious problem under any circumstance when there is a prolonged severe food shortage.

28. UNDERNUTRITION AND NEOPLASTIC DISEASES

It is now well known that the incidence, growth and recurrence of several types of tumors in animals can be reduced or even prevented by exceedingly severe undernutrition.⁵⁸ The prophylactic and therapeutic possibilities of caloric restriction in man have been argued,⁵⁹ but there are serious difficulties in application. In animal experiments inhibition of tumors has required the use of dietary levels so low as to retard growth greatly and to prevent estrus.⁶⁰ While such levels are reached in human famine, there are no data to show any important effect on the incidence or course of cancer in man. The most that may be said is that the mortality statistics from starvation periods (e.g., in Greece and the Netherlands) do not indicate any increase in cancer; the number of deaths ascribed to neoplasms is reduced in proportion to the total deaths.⁴¹

29. HYPERTENSION AND CORONARY DISEASE

It has been noted (section 21) that caloric undernutrition normally produces a fall in the blood pressure. What effect this may have on the incidence and course of hypertension and vascular diseases in general is an

intriguing question. There are many clinical impressions which are suggestive, but these have little objective basis. Mortality data from famine areas are of limited value because of the problems of certification; in most cases the figures are only grouped under such broad headings as "cardiovascular disease."

The hospital records of Leningrad during the siege of 1941-1942 and after are interesting. In this period of severe food shortage the hospital admissions for hypertension remained at about the ordinary level but the deaths from such conditions dropped sharply.⁶¹ After the food supply was restored to much better levels there was a veritable epidemic of hypertension and coronary deaths in Leningrad. Transient hypertension during refueling was also noted in the Far East.⁶² There is clearly an important area for research here.

30. UNDERNUTRITION AND DIABETES

The association of diabetes with obesity and the advantage of food restriction in this disease are well established.⁶² These general relations are reflected in substantial changes in morbidity and mortality from diabetes during periods of food shortages even when these are not productive of real starvation.⁶³ An improvement in the clinical condition of patients with established diabetes is quickly apparent when the food supply is restricted. Beckert⁶⁴ compared 604 diabetic persons in Dresden in the summer of 1939 and again in the summer of 1940. A loss in weight was recorded in 62.2 per cent. Clinically, 45 per cent were improved and only 5 per cent were worse. In Belgium, moderate food shortages in the first three years of World War II were associated with a notable diminution in diabetes morbidity and a more favorable clinical course of this disease.⁶⁵

31. FAMINE EDEMA

Famine (hunger or war) edema was in a sense "discovered" in World War I, though it had been casually observed throughout the ages. The simulation of this condition by protein depletion and a variety of evidences supporting Starling's theory of the role of colloid osmotic pressure in fluid balance led to almost universal belief, in spite of unheeded objections,⁶⁶ that famine edema is simply a result of hypoproteinemia. World War II, however, contributed an unexpected denouement.⁶⁷

In starved persons edema may appear with relatively normal values for plasma protein concentration and the albumin fraction is not necessarily decreased. Furthermore, though on the average there may be some relation between the plasma protein level and the extent of the edema, the relation is extremely rough and does not hold for individuals.⁶⁸ Cardiac failure is not involved, and the venous blood pressure is actually lower than normal. Finally, it should be noted that the edema fluid is extraordinarily low in protein.

61. Stapleton, T.: Oedema in Recovered Prisoners of War, *Lancet* 2: 850-851, 1946.

62. Joslin, E. P.; Dublin, L. I., and Marks, H. H.: Studies in Diabetes Mellitus: IV. Etiology, *Am. J. M. Sc.* 192: 9-23, 1916. Newburgh, L. H.: Control of the Hyperglycemia of Obese Diabetics by Weight Reduction, *Ann. Int. Med.* 17: 935-942, 1942.

63. Stocks, P.: Diabetes Mortality in 1861-1942 and Some of the Factors Affecting It, *J. Hyg.* 43: 242-247, 1943.

64. Beckert, W.: Ueber die Häufigkeit des Diabetes und die Auswirkungen der Lebensmitteleinsparung auf dessen Verlauf, *München med. Wehnschr.* 87: 1333-1335, 1940.

65. Brull, L., and Decharneux, G.: Etude statistique sur mille cas de diabète, *Rev. belge sc. méd.* 15: 85-97, 1943.

66. Youmans, J. B.; Bell, A.; Donley, D., and Frank, H.: Endemic Nutritional Edema: I. Clinical Findings and Dietary Studies, *Arch. Int. Med.* 50: 843-854 (Dec.) 1932.

67. Keys, A.; Taylor, H. L.; Mickelson, O., and Henschel, A.: Famine Edema and the Mechanism of its Formation, *Science* 103: 669-670, 1947.

68. Denz, F. A.: Hunger Oedema, *Quart. J. Med.* 16: 1-19, 1947. Keys, Taylor, Mickelson and Henschel.⁶⁷

55. Kirchner, M.: Die Zunahme der Tuberculose Während des Weltkrieges und ihre Gründe, *Zentrabl. f. d. ges. Tuberk.—Forsch.* 134: 228-271, 1921.

56. Faber, K.: Tuberculosis and Nutrition, *Acta tuber. Scandinav* 12: 287-335, 1938.

57. Bourgeois, P.; Vie, J., and Bellin, A.: Les tuberculoses de famine étudiées dans les hôpitaux psychiatriques de la Seine, *Bull. et mém. Soc. méd. d. hôp. de Paris* 59: 302, 1943. Forel, O.: La sous-alimentation en France, *Rev. Méd. De La Suisse Rom.* 63: 47, 1943. Dols and van Arcken.¹⁰ Brozek, Wells and Keys.¹² Markowski.⁵⁴ Kirchner.⁵⁵

58. Rusch, H. P., and Baumann, C. A.: Nutritional Aspects of the Cancer Problem, *Nutrition Rev.* 4: 353-355, 1946.

59. Potter, V. P.: The Role of Nutrition in Cancer Prevention, *Science* 101: 105-109, 1945.

60. Morris, H. P.: Ample Exercise and a Minimum of Food as Measures for Cancer Prevention? *Science* 101: 457-459, 1945.

In ordinary cases of edema due to famine the edema is not so much an accumulation of tissue fluid as simply a retention of the prestarvation level of extracellular fluid; the edema tends to be the expression of a relative and not an absolute excess of fluid in the body. It is probable that mechanical factors—elasticity and structure—outside the capillaries are responsible.

The edema is ordinarily only moderate and is of the soft, dependent type, being notable in the face in the morning and shifting to the lower extremities during the day. Ascites is seldom seen except where there is severe anemia, intercurrent infection, heart failure or decided hypoproteinemia. The latter appears when the diet is unusually devoid of protein. The edema itself is not particularly troublesome, but it is a useful rough guide in evaluating the nutritional state in surveys; it is not a reliable or sensitive indicator in the individual. During refeeding it tends to appear and disappear, being affected by exercise and posture as well as the dietary level.

32. PROBLEMS OF REHABILITATION

The problems of nutritional rehabilitation following semistarvation periodically arise in acute form. The practical necessities of relief allow scant opportunity for research, and the factual information is extremely little. In large scale relief operations the limitations of food materials emphasize the distinction between optimal and feasible programs; the criteria must be those of efficiency and economy.

The character of the diet in the preceding period of semistarvation is important. In general, there are vitamin deficiencies to be corrected in Asia whereas in Europe these tend to be much less prominent. The severity of the state of undernutrition is a determining factor. Almost any food items may be used for the majority of an underfed population, but those persons in an extremely depleted state need easily digested food in frequent feedings. Intravenous feeding is seldom desirable or necessary.

Experience in Europe supports the observations in the Minnesota experiment where it appeared that calories in relative abundance are the first need. The Minnesota subjects manifested a rate of recovery closely proportional to the calories supplied; at intakes of less than 2,700 Calories daily, recovery was exceedingly slow and apparently would have required more than a year. In the Minnesota experiment it was found that intakes over 5,000 Calories daily are unnecessary and may be dangerous. In these young men engaged in light activity the optimal level appeared to be something like 3,500 Calories.

With adequate calories supplied in ordinary foods, including breads made with low-extraction flour, the protein intake will normally be 70 Gm. or more per day. At these levels the isocaloric substitution of protein for carbohydrate produced no discernible benefit in the Minnesota experiment. The extra protein supplement was limited to only 20 Gm. a day, but there is no reason to believe that larger amounts would have important effects.

Special vitamin supplements had no effect on the course of rehabilitation in the Minnesota experiment, nor is there any objective evidence of value in the trials in Europe. It is unnecessary to supply vitamin concentrates unless there is clinical evidence of vitamin deficiency and the relief diet itself is a poor source of vitamins.

With the best of diets and rehabilitation treatment, full recovery from severe undernutrition is slow. Body

weight is regained long before functional normality is restored. When the undernutrition lasts for many months and the weight loss is between 20 and 30 per cent, it is probable that complete rehabilitation, including restoration of working capacity, is seldom achieved in less than a year in young adults. With older persons a slower recovery must be expected. It is possible that children recover more promptly.

33. LESSONS FROM CONTEMPORARY FAMINE EXPERIENCE

Acute and persistent problems of starvation and food shortages began to be apparent early in World War II. The problems were not new, but their overwhelming nature has focused attention on them so that it should no longer be possible for them to be neglected by nutritionists in favor of the spectacular advances concerning individual nutrients. But this reawakened interest is coming late, so late that years of opportunity for definitive research have been lost. The data gathered in and immediately after World War II are valuable, but they barely touch many points and on others leave confusion and uncertainty.

Many of the accomplishments and the problems recognized but unanswered are indicated in several recent discussions and monographs.⁶⁹ These may be examined with profit not only for the facts presented but for the indications of facts not collected, the theories not critically examined and the questions not answered.

⁶⁹ Drummond, J.: *Famine Conditions and Malnutrition in Western Europe*, J. Roy. Soc. Arts 94: 770-777, 1946. Boerema, J.: *Medische Ervarenissen in Nederland Tijdens de Bezetting, 1940-1945*. Groningen, J. B. Wolters, 1944. Ligwood, E. J.: *Enseignements de la guerre 1939-1945 dans le domaine de la nutrition*, Liege, Ed. Desoer, 1947, Fleisch.⁷⁰

ACCEPTED FOOD

The following products have been accepted as conforming to the Rules of the Council.

JAMES R. WILSON, M.D., Secretary.

Vital Foods Corporation, Evanson, Ill. (Distributed by the American Hospital Supply Company, Evanston, Ill.)

TOMAC ORAL PROTEIN SUPPLEMENT, UNFLAVORED, consists of Ca-Sal (casein and lactalbumin), food yeast, lactalbumin, carrageenin and salt. *Analysis* (submitted by manufacturer).—Protein (N $\times$ 6.25) 67.5%, carbohydrate 16.5%, ash 7.0%, moisture 6.0%, ether extractables 1.0%. *Calories*.—3.25 per gram; 92 per ounce.

Use.—For conditions that require an increased intake of protein.

TOMAC ORAL PROTEIN SUPPLEMENT, FLAVORED, consists of Ca-Sal (casein and lactalbumin), lactalbumin, food yeast, sugar cane, carrageenin and flavor.

Flavoring.—Imitation powdered maple flavor, or pure lemon flavor with citric acid.

Analysis (submitted by manufacturer).—Protein (N $\times$ 6.25) 61.5%, carbohydrate 26.5%, ash 6.2%, moisture 5.1% and ether extractables 0.7%. *Calories*.—3.25 per gram; 92 per ounce.

Use.—For conditions that require an increased intake of protein.

Sharp & Dohme, Incorporated, Glenolden, Pa.

"DELCO" PROTEIN-CARBOHYDRATE GRANULES, mixture of protein and carbohydrate, with vanillin, coumarin and essential oils as flavoring agents.

Analysis (submitted by manufacturer).—Protein (N $\times$ 6.25) derived from milk 50 per cent, and carbohydrate derived from cane, milk and grain sugars 30 per cent.

Calories.—320 per 100 Gm.

Use.—For conditions that require an increased intake of protein.

Maple Island Farm, Inc., Stillwater, Minn.

"VALLE VERDE LECHE EN POLVO" OR "MAPLE ISLAND'S POWDERED WHOLE MILK", a powdered whole milk with vitamin D₂ added in the form of irradiated ergosterol.

Analysis (submitted by manufacturer).—Butterfat 28.40 per cent, protein (N $\times$ 6.38) 26.35 per cent, lactose 37.47 per cent, ash 5.78 per cent, moisture 2.00 per cent and 400 U.S.P. units of vitamin D₂ per reconstituted quart.

Calories.—5.10 per gram; 145.00 per ounce.

Use.—Whole milk powder fortified with vitamin D₂ for general use where whole milk or whole milk solids are required.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 16, 1948

BCG VACCINATION

Of the two methods of preventing tuberculosis, namely, segregation of infected persons and immunization of those exposed to infection, the latter, according to Birkhaug,¹ has not received sufficient emphasis in this country. The skeptical attitude toward immunization is reflected in the recent report of Levine and Sackett² on the results of BCG immunization in New York City. Those authors expressed the opinion that as a public health measure the routine vaccination of children from tuberculous homes is less advantageous than the removal of the tuberculous person from the home. While tuberculosis control programs, exclusive of vaccination, have reduced the death rate from tuberculosis in the United States from 200 to 36 per 100,000 population in the last forty years, Denmark, during the same period, utilizing both segregation and immunization, has reduced tuberculosis mortality from about 300 to 32 per 100,000 population. Holm³ stated that since 1940 vaccination with the bacillus Calmette-Guérin has been adopted in Denmark as an essential weapon in the fight against tuberculosis. All children with a negative tuberculin reaction in a tuberculous environment have been vaccinated, also the newborn, and on development of a positive reaction they have been permitted to remain in their environment. The Tuberculosis Dispensary of Copenhagen reported that morbidity and mortality of tuberculosis among the children in a tuberculous environment has been reduced following vaccination to almost zero. Holm expressed the belief that BCG vaccination gives considerable, although not absolute, protection. It protects almost completely against the morbid phenomena of the primary infection, and it also affords considerable protection against genuine tuberculosis of the various organs, in particular against pulmonary tuberculosis.

Even with the reduction in the incidence, 50,000 deaths from tuberculosis in the United States occurred in 1947, and the total number of tuberculous patients

in this country is about 500,000. According to Birkhaug only half of these persons are under treatment and only one fourth in hospitals and sanatoriums. Almost 180,000 frank cases of tuberculosis are left at large to infect the healthy population. In an attempt to improve a similar situation, Denmark, Norway and Sweden have entered on a nationwide BCG vaccination of the tuberculin-negative population under 50 years of age. In Norway, BCG vaccination was made compulsory in 1947 for all tuberculin-negative persons under 50 years of age.

The rapid decline in tuberculosis mortality has created a new factor of epidemiologic importance; namely, a great number of negative reactors, persons who failed to acquire specific resistance against tubercle bacilli by means of a mild childhood infection. Heimbeck⁴ of Norway made the important observation, since verified in other countries, that the victims of tuberculosis among student nurses working in tuberculosis wards were nearly always the tuberculin-negative reactors.

The BCG Advisory Committee of the state of New York⁵ reported that BCG vaccination is the only known practical method of reducing morbidity and mortality from tuberculosis. There is a general agreement that it is safe and that it serves to convert nonreactors to tuberculin to reactors through infection with avirulent and benign bovine tubercle bacilli. BCG vaccination has no value in treating tuberculosis.

Madsen of Norway made the important observation that the primary tuberculous complex produced in tuberculin-negative reactors by means of BCG vaccination is sufficient to protect against the progression of a subsequently superimposed virulent infection. The investigations of Heimbeck on student nurses, of Ferguson in Canada⁶ and of Rosenthal⁷ and his co-workers in Chicago confirmed that vaccination with BCG inhibits primary tuberculosis in a manner analogous with the specific resistance induced by spontaneous and clinically silent infection with virulent tubercle bacilli. The work of Aronson and Palmer⁸ among North American Indians is particularly significant because it was carried out on two groups of persons that are as comparable as humanly possible. In terms of cases per thousand person-years, the rates of mortality from tuberculosis were 24.3 and 4.7 respectively.

Birkhaug suggested that BCG vaccine should be recommended for extensive use in the United States in tuberculin-negative reactors in groups occupationally exposed to tuberculous infections and in population groups with high tuberculosis mortality and morbidity, and where there has been a known exposure to tuberculosis or where an exposure is likely to occur.

1. Birkhaug, K.: BCG and the Newer Epidemiology of Tuberculosis, *Bull. New York Acad. Med.* 24:411-430 (July) 1948.

2. Levine, M. I., and Sackett, Margaret F.: Results of BCG Immunization in New York City, *Am. Rev. Tuberc.* 53:517 (June) 1946.

3. Holm, J.: BCG Vaccination in Denmark, *Pub. Health Rep.* 61:1298-1315 (Sept. 6) 1946.

4. Heimbeck, J.: BCG Vaccination, *Lancet* 2:438, 1947.

5. BCG Advisory Committee of New York: Report of a Conference on BCG Vaccination, *Pub. Health Rep.* 62:346-350 (March 7) 1947.

6. Ferguson, R. G.: BCG Vaccination in Hospitals and Sanatoria of Saskatchewan, *Am. Rev. Tuberc.* 54:325, 1946.

7. Rosenthal, S. R.; Bland, M., and Leslie E. I.: Ten Years' Experience with BCG, *J. Pediat.* 26:470, 1945.

8. Aronson, J. D., and Palmer, C. E.: Experience with BCG Vaccine in the Control of Tuberculosis among North American Indians, *Pub. Health Rep.* 61:802, 1946.

OLFACTORY DEPRESSANT

In 1934 Elsberg and Levy¹ suggested a simple method of measuring the acuteness of the sense of smell. The method consisted of injecting different volumes of odorous air into the nasal passages, the smallest volume which produced a sensation of the particular odor being taken as a measure of olfactory acuity. The Elsberg apparatus included bottles of fixed size, each containing a constant amount of odorous substance, such as coffee or citral. The bottles are closed by rubber stoppers, which contain inlet and outlet tubes. A nosepiece ending in two olives is connected with the outlet tube, which is closed with a pinchcock. The inlet tube is connected with a syringe by means of which measured volumes of air can be injected into the bottle. This volume is released into the nasal passages by pressing the pinchcock. The smallest volume of odorous air which produces a sensation of the particular odor three times in succession is recorded, the subject removing the nosepiece and resting for thirty to sixty seconds between tests.

Adopting this technic, Goetzel and Stone² of the Permanente Foundation, Oakland, Calif., demonstrated a diurnal cycle in olfactory acuity in human subjects. The pattern of these variations was found to be remarkably constant and intimately connected with the habitual dietary cycle. Meals, if taken at normal intervals, are regularly preceded by a period of increased olfactory acuity and followed by a period of decreased acuity. When food is ingested between meals the precibal increase fails to occur. When a meal is omitted, the postcibal decrease does not develop. The precibal increase in olfactory acuity is apparently a measure of increased appetite, while the postcibal decrease is apparently a measure of the resulting feeling of satiety.

As a practical application of this technic the California physiologists studied the effects on the sense of smell of oral administration of amphetamine sulfate. The ability of this drug to subdue the sensation of hunger is generally accepted. The drug is frequently used as an adjuvant in the treatment of obesity. The physiologic mechanism of this drug's action is still undetermined. Many physicians would attribute its anorexial action to an inhibition of gastric tone,³ while others would explain it as a result of an elevation of mood with the production of a sense of well-being.⁴ The theory that the resulting anorexia is due to a depressant effect on the olfactory sense, however, was

suggested by Ivy.⁵ This was deduced from his observation that the drug produces anorexia in dogs even after extrinsic denervation of the stomach and intestines.

Goetzel and Stone tested the Ivy theory by measuring the olfactory acuity of persons before and after oral administration of amphetamine sulfate. On the control days when no drug was given the olfactory acuity increased rapidly from 10 a. m. (beginning of experiment) to 12 o'clock. The acuteness then fell precipitately during the lunch period (12 to 1). By the end of this period the sense of smell was depressed below its initial (10 a. m.) level. From 1 p. m. on the acuity gradually increased, reaching about half the pre-lunch level by 5 p. m. (end of experiment).

On the test days 10 mg. of the drug was given orally at about 10:30 a. m. The normal increase in olfactory acuity did not occur and was replaced by gradual fall in acuity. The olfactory acuity remained subnormal till the end of the test (5 p. m.). There was an acceleration of the dulling effect on the sense of smell as a result of lunch. Similar depressing effects were produced when administration of the drug was delayed till immediately before lunch, and on days when the drug was administered in lieu of lunch. With a freely selected caloric intake at lunch time, there was without exception a 35 to 40 per cent voluntary reduction in caloric intake when the lunch was preceded by administration of the drug. In all subjects the drug produced a sensation of satiety.

From these and other observations Goetzel concludes that the functional state of the olfactory system is important in the regulation of the sensation complex of appetite and satiety and that the anorexia produced by amphetamine sulfate is due primarily to its depressant action on the olfactory sense.

PSYCHOANALYSIS

Unlike every other medical discipline, the tenets of psychoanalysis question the right or qualification of those who have not themselves been subjected to psychoanalysis to express any valid opinion on the subject.

Recently Hiram K. Johnson,¹ writing in the *Psychiatric Quarterly*, presented a critique of psychoanalysis from a sympathetic yet skeptical and scientifically detached attitude. "In looking over the literature," he says, "one often has the feeling that the Freudian analyst is less concerned with results than with the fact that he is solely in possession of the one system of psychodynamics which purports to be thoroughly scientific. . . . Rather grudgingly it is admitted by analysts that dream interpretation is a somewhat flexible matter and depends to a large extent

1. Elsberg, C. A., and Levy, I.: *Bull. Neurol. Inst. New York* 4: 5, 1934.

2. Goetzel, F. R., and Stone, F.: *Gastroenterology* 10: 708, 1948.

3. Ritvo, M.: *Am. J. Roentgenol.* 56: 868, 1936. Smith, O. N., and Chamberlin, G. W.: *Radiology* 29: 676, 1937. Rosenberg, D. H.; Arens, R. A.; Marcus, P., and Necheles, H.: *J. A. M. A.* 110: 1994, 1938. Van Lier, E. J., and Sleeth, C. K.: *J. Pharmacol. & Exper. Therap.* 62: 111, 1938. Beyer, K. H., and Meek, W. J.: *Arch. Int. Med.* 63: 752, 1939. Kunstadter, R. H., and Necheles, H.: *Am. J. Med. Sc.* 205: 820, 1943.

4. Nathanson, M. H.: *J. A. M. A.* 108: 529, 1937. Ulrich, H.: *New England J. Med.* 217: 696, 1937. Lesses, M. F., and Myerson, A.: *New England J. Med.* 218: 119, 1938. Beyer, K. H.: *J. Pharmacol. & Exper. Therap.* 66: 318, 1939. Davidoff, E., and Reifenshtein, E. C.: *New York J. Med.* 40: 247, 1940.

5. Harris, S. C.; Ivy, A. C., and Searle, L. M.: *J. A. M. A.* 134: 1468, 1947.

1. Johnson, H.: *Psychoanalysis—A Critique*, *Psychiatric Quart.* 22: 321-338, 1948.

on the preoccupations, values and therapeutic aims which the analyst maintains."

Dr. Johnson points out the close similarity between the problems concerned in psychoanalysis and those dealt with in theology. All of the "neurosis-producing patterns" which Freudian analysis attempts to destroy have long been recognized as evil in the eyes of the theologian—long before a scientific terminology was considered. "It will be seen," Johnson states, "that the Freudian psychology regards the adult personality as a composite of Jekylls and Hydes, but is concerned exclusively with the Hydes. These, it sets about to deracinate by the infantile roots, using a bizarre yet historical and sometimes effective method of negative conditioning. The chief weapon, as has been noted, in this boggy hunting is a highly specialized variety of associations which are anything but 'free.'"

Johnson believes that the chief contribution of Freudian psychology to the science of human mind may turn out to be that it has stressed the historical development of personality and aided in bringing into focus memories, emotions and attitudes which generally belong to the fringes of consciousness. He says that the history of magic and experimental science reveals a tendency for each successive phase of culture to develop a blind spot for its cults and errors. "Freudian psychoanalysis illustrates this phenomenon [Johnson] and corresponds to the vogue of phrenology and animal magnetism in the preceding century."

Because today so many have a highly emotionally charged attitude toward psychoanalysis and the teaching of the school of Freud, it takes courage to publish such strong statements. If, however, psychoanalysis wishes to claim a place as a scientific subject comparable to that of physiology or pathology, its devotees must be prepared not only to receive such comments but to answer them in a detached and scientific manner which will satisfy the collective intelligence of the scientifically minded.

Current Comment

HYPERTENSION AND PHEOCHROMOCYTOMA

Tumors of chromaffin cells, pheochromocytoma or paraganglioma, are now recognized so frequently they no longer can be regarded as rare. They may occur in true pheochrome tissue anywhere, but they occur most frequently in the adrenal medulla. While usually single, they may be multiple, a fact of special importance in the surgical treatment of such conditions. MacKeith¹ has classed 91 per cent of pheochromocytomas in 165 cases as not cancerous; however, the nature and structure of this type of neoplasma merit more study. The production of epinephrine by the cells of pheochromocytoma is a perfect example of functional

activity by neoplastic endocrine cells. As reviewed and studied by Cahill,² pheochromocytoma may cause typical hypertension, paroxysmal and also continuous, oftener perhaps in children than in adults. Significant amounts of epinephrine have been demonstrated in the tumor tissue by assay as well as by special staining; abnormal amounts of epinephrine may occur in the blood of the patient. The handling of pheochromocytoma during operation may be dangerous because of release of epinephrine and should be postponed until all vessels surrounding the tumor or connected with it are ligated. If necessary in such circumstances, the immediate fall in pressure can be controlled by intravenous injection of epinephrine. On removal of all the tumor tissue there follows a permanent fall to normal of the blood pressure—a unique cure of hypertension by removal of its cause.

RHEUMATOID AGGLUTININATING GLOBULIN

A new serum reaction, a possible key to the biochemical puzzle of rheumatoid arthritis, is described by Rose¹ and associates of Columbia University. During complement fixation tests for rickettsialpox, the convalescent serum of a patient was observed to agglutinate unhemolyzed sheep erythrocytes. In addition to having suffered recently from rickettsial infection, the patient was also afflicted with rheumatoid arthritis in an active state. Further investigation revealed that the serum of this patient would agglutinate normal sheep erythrocytes only in dilutions less than 1:16. The same erythrocytes after being sensitized with a small amount of rabbit anti-sheep-antibody were agglutinated in a serum dilution as high as 1:2,048, a 128 fold differential titer. A study was then undertaken to determine in what circumstances a similar high differential was present in the serums of other patients. A study of 110 patients showed that a similar high differential occurs almost exclusively in the serums of patients with rheumatoid arthritis and that the agglutinin titer for sensitized sheep cells varies with the activity and severity of the arthritic process. In patients with other arthritic diseases and with clinically inactive rheumatoid arthritis, the differential agglutination titer falls to within normal limits. It is never more than sixteen times the titer of agglutinins for nonsensitized sheep erythrocytes. Differential sheep cell agglutination tests were carried out with the electrophoretically separated globulin in fractions of serums from patients with rheumatoid arthritis. The essential agglutinin occurs apparently quantitatively in the globulin fraction of such serum. The precise nature of this rheumatoid agglutinating globulin, however, has not been determined. These investigators believe that their simple sheep cell differential agglutinin test may be of value in determining the activity status of patients suffering from rheumatoid arthritis. It may also serve as an aid in the differential diagnosis between rheumatoid arthritis and other diseases with arthritic manifestations.

2. Cahill, G. F.: Pheochromocytomas, *J. A. M. A.* **138**:180 (Sept. 18) 1948.

1. Rose, H. M.; Regan, C.; Pearce, E., and Lipman, M. O.: *Proc. Soc. Exper. Biol. & Med.* **68**:1 (May) 1948.

1. MacKeith, R.: Adrenal-Sympathetic Syndrome. Chromaffin Tissue Tumour with Paroxysmal Hypertension, *Brit. Heart J.* **6**:1, (Jan.) 1944.

ORGANIZATION SECTION

Official Notes

PROPOSED SCIENTIFIC PROGRAM AT INTERIM SESSION

Nov. 30-Dec. 3, 1948

Auditorium, St. Louis

TUESDAY, NOVEMBER 30

P. M.

- 2:00 Lecture in Opera House on Hypertension. Irvine H. Page, Cleveland.
- 2:30 Lecture in Opera House on Problems of Delivery. Ralph Reis, Chicago.
- 3:00 Intermission.
- 3:30-5:00 Clinical Presentations on Obstetrics in Room S-1; Poliomyelitis in Room S-2; Arthritis in Room S-3; Cancer in Room S-6; Radiology in Room S-7; Laboratory in Room S-8, and Hypertension in Room S-10.

WEDNESDAY, DECEMBER 1

A. M.

- 9:00 Lecture in Opera House on Pediatrics. (Speaker to be announced.)
- 9:30 Lecture in Opera House on Position of the Laboratory in the Diagnosis and Control of Disease. F. W. Konzelmann, Atlantic City, N. J.
- 10:00 Intermission.
- 10:30-12:00 Clinical Presentations on Pediatrics in Room S-1; Poliomyelitis in Room S-2; *Diabetes in Room S-3; Dermatology in Room S-6; Radiology in Room S-7; Laboratory in Room S-8, and Hematuria in Room S-10.

P. M.

- 2:00 Lecture in Assembly Room 1 on Arthritis. (Speaker to be announced.)
- 2:30 Lecture in Assembly Room 1 on Common Skin Diseases. Everett Fox, Dallas, Texas.
- 3:00 Intermission.
- 3:30-5:00 Clinical Presentations on Obstetrics in Room S-1; Poliomyelitis in Room S-2; *Diabetes in Room S-3; Cancer in Room S-6; Radiology in Room S-7; Laboratory in Room S-8, and Heart in Room S-10.

THURSDAY, DECEMBER 2

A. M.

- 9:00 Lecture in Opera House on Hematuria. (Speaker to be announced.)
- 9:30 Lecture in Opera House on Jaundice. Sidney Portis, Chicago.
- 10:00 Intermission.
- 10:30-12:00 Clinical Presentations on Pediatrics in Room S-1; Poliomyelitis in Room S-2; *Diabetes in Room S-3; Dermatology in Room S-6; Jaundice in Room S-7; Laboratory in Room S-8, and Hematuria in Room S-10.
- 10:00 a. m. to 1:00 p. m.*

P. M.

- 2:00 Lecture in Opera House on Diagnosis and Early Treatment of Poliomyelitis. Thomas Gucker, Boston.
- 2:30 Lecture in Opera House on Heart. George R. Herrmann, Galveston, Texas.
- 3:00 Intermission.
- 3:30-5:00 Clinical Presentations on Obstetrics in Room S-1; Poliomyelitis in Room S-2; Diabetes in Room S-3; Cancer in Room S-6; Jaundice in Room S-7; Laboratory in Room S-8, and Heart in Room S-10.

FRIDAY, DECEMBER 3

A. M.

- 9:00 Lecture in Opera House on Cancer. C. P. Rhoads, New York.
- 9:30 Lecture in Opera House on Diabetes. E. P. Joslin, Boston.
- 10:00 Intermission.
- 10:30-12:00 Clinical Presentations on Pediatrics in Room S-1; Poliomyelitis in Room S-2; Arthritis in Room S-3; Dermatology in Room S-6; Jaundice in Room S-7; Laboratory in Room S-8, and Hematuria in Room S-10.

Washington Letter

(From a Special Correspondent)

Oct. 14, 1948.

Cost in Mental Hospitals Up 65 Per Cent

Statistics compiled by Mental Hygiene Division, U. S. Public Health Service, demonstrate the increasing cost of maintaining mental hospitals. Expenditures by such institutions, public and private, totaled approximately \$400,000,000 in 1947, an increase of \$154,000,000 over the figure for 1945, according to Public Health Service estimates. On a per capita basis, the increase was from \$470 per patient in 1945 to \$731 last year. It was pointed out by the Mental Hygiene Division that the steep rise is reflective not only of higher general price levels but also of improvement in quality of care given in mental hospitals during the early postwar years. Average daily resident patient population during 1947 was 540,000, compared with 525,000 in 1946 and 513,000 in 1945.

Illness and Off-Job Accidents Cause Most Absenteeism

Three fifths of the absenteeism among manufacturing workers results from illness and accidents away from work, according to findings of a joint study conducted by the Bureau of Labor Statistics, the Social Security Administration and the U. S. Public Health Service. The survey covered two hundred and forty-six plants in 1947. The average employee lost 9.6 working days during the year, of which illness and nonindustrial accidents accounted for 6.5 days, personal reasons 2.5 days and industrial injuries only 0.6 day. Seasonally, absenteeism rates were highest in the year's first quarter (when respiratory infections are at their height), declined substantially in the second, reached the lowest point in the third quarter and rose sharply in the fourth quarter.

Seven Military Medical Research Bases Inspected

The medical sciences committee of the Research and Development Board recently completed its first field trip, in the course of which it visited Army, Navy and Air Force research units at the following locations: Aero Medical Laboratory, Philadelphia; Special Devices Center, Sands Point, Long Island; Army-Navy Medical Procurement Office, Fort Totten, N. Y.; Climatic Laboratory, Lawrence, Mass.; U. S. Submarine Base, New London, Conn.; Army Nutritional Laboratory, Chicago; Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio.

BCG Vaccinations in Alaska Progressing

The Bureau of Indian Affairs (Interior Department) has announced completion of its BCG vaccination program at Point Barrow, Alaska. Dr. Joseph D. Aronson, of Philadelphia, examined 600 Eskimos at the remote Alaskan outpost, and 250 of them received the antituberculosis vaccine. Similar work was done subsequently at Sitka and Wrangell, where 74 persons were vaccinated. Assisting Dr. Aronson were Drs. William Carr, contract physician in the service of the Navy Department; Elaine Schwinge, of the Territorial Department of Health; Ed Gloomquist, of Public Health Service, and Florence Marquis, detailed by the Public Health Service to the Territory of Alaska.

Advisory Committee to Children's Bureau Formed

The recently formed advisory committee to the Children's Bureau (Federal Security Agency) on federal-state programs for maternal and child health and services to crippled children held its first meeting in mid-September, and Dr. Harry H. Gordon, professor of pediatrics at University of Colorado Medical Center, was elected chairman. Serving with him are the following: Drs. Raymond B. Allen, Allan M. Butler, W. W. Bauer, Dean A. Clark, William J. Darby, M. Edward Davis, Kenneth A. Easlick, Nicholson J. Eastman, William T.

Green, Charles F. Good, Harry H. Gordon, John P. Hubbard, Herbert R. Kobes, William Mengert, James Raglan Miller, Oscar L. Miller, Harry A. Ong, John Z. Preston, Abraham Barhash, Duncan E. Reid, Hugh B. Robins, Nathan Sinai, Thomas E. Shaffer, Ernest Stebbins, Felix J. Underwood, Abram L. Van Horn, R. M. Walls and James L. Wilson; also, George Bugbee, executive director, American Hospital Association; Harriett M. Bartlett, Simmons College; Hazel Corbin, R.N., New York Maternity Center Association; Claudia Durham, R.N., Meharry Medical College; Mrs. Lulu Evanson, National Farmers Union; Katharine Faville, R.N., dean, Wayne University College of Nursing; Lawrence J. Linck, executive director, National Society for Crippled Children and Adults; Mary Blanche Moss, executive secretary, American Association of Medical Social Workers; Ewell Newman, National Urban League; Harry Read, Congress of Industrial Organizations; Raymond Rich, New York City; Edward S. Rogers, University of California School of Public Health; Catherine E. Sheckler, R.N., American Nurses' Association; Randel Shake, American Legion; Florence C. Thorne, American Federation of Labor; Mrs. Roy C. F. Weagley, American Farm Bureau Federation; Barbara White, American Physiotherapy Association; Mrs. Eva Ylvisaker, American Dietetic Association; Mrs. C. D. Lowe, National Congress of Parents and Teachers; Mrs. Stella Scurluck, General Federation of Women's Clubs, and Mrs. Edith Hyslop Sherrard, American Association of University Women.

Meetings of the committee will be twice yearly, or oftener, at the call of the Children's Bureau.

Organize Advisory Body on Streptococcus Infections

Newest branch of the Army Epidemiological Board to be formed is the Commission on Streptococcal Infections, which held its organization meeting in Washington September 20. The chairman is Dr. W. S. Tillett, of New York City. From three to five members and about six associate members will comprise the commission, whose composition is not yet completed. The September 20 meeting was devoted largely to discussion of major problems which will confront the unit, including the need of stimulating research in order to gather more information on World War II incidence in the armed forces, basic immune processes and the various types of streptococci. Also discussed were plans for studies on prophylaxis, utilizing penicillin and sulfonamide compounds, which the Army will conduct this winter at certain camps in the Rocky Mountain area of the country.

The Army Epidemiological Board's Commission on Virus and Rickettsial Diseases, of which Dr. John R. Paul is director, will meet on September 30 to discuss the recent outbreak of Japanese B encephalitis in Japan, which to date has claimed an estimated 6,000 cases.

Commission Announces Fellowship Awards

Award of one hundred and sixty-two research fellowships in the biologic, physical and agricultural sciences has been announced by the Atomic Energy Commission. The successful applicants, representing thirty states, will study in forty-three research and educational institutions. Three of the five postdoctoral biologic fellowships awarded will be taken at the University of California and one each at New England Deaconess Hospital (Boston) and Harvard University. All but nineteen of the awards are predoctoral fellowships, whose fields of study will include biologic action of radiation, tracer studies, pathologic effects of radioactive iodine, mechanism of vitamin D activity, hormone investigations and health physics.

Supplies Marked for October Sales

Hospital and laboratory equipment, drugs and miscellaneous supplies are included among federal war surplus property which will be placed on sale by the War Assets Administration in October. Information on the sales, which will be conducted in various parts of the country, may be obtained from the War Assets Administration offices in Chicago, Detroit, Cincinnati, St. Louis, Philadelphia, and Trenton and Linden, N. J.

Booklet Describes Dangers of Abandoned Mines

A booklet, "Hazards of Entering Old Workings," recently issued by Bureau of Mines (Department of Interior) describes the perils to health and limb that lurk in abandoned mines, quarries and open pits. Anoxia and gas poisoning, illness caused by drinking polluted water, snakebites and spider stings, cave-ins—these are among the hazards cited. "Hazards of Entering Old Workings," also known as Information Circular 7479, may be obtained without cost from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

Coming Medical Meetings

American Medical Association Interim Session, St. Louis, Municipal Auditorium, Nov. 30-Dec. 3. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Conference of State Secretaries and Editors, St. Louis, Hotel Statler, Nov. 28-29. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

National Medical Public Relations Conference, St. Louis, Hotel Statler, Nov. 27. Mr. Lawrence W. Rember, 535 N. Dearborn St., Chicago 10, Director.

American Academy of Dermatology and Syphilology, Chicago, Palmer House, Dec. 5-9. Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, Palmer House, Oct. 10-15. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Secretary.

American Academy of Pediatrics, Atlantic City, Chalfonte-Haddon Hall, Nov. 20-23. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association of Railway Surgeons, Chicago, Nov. 21-23. Dr. Raymond B. Kepner, 547 W. Jackson Blvd., Chicago 6, Secretary.

American Clinical and Climatological Association, Hot Springs, Va., The Homestead, Nov. 8-10. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American College of Surgeons, Los Angeles, Biltmore Hotel, Oct. 18-22. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Public Health Association, Boston, Nov. 8-12. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Oct. 31-Nov. 1. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Anesthesiologists, St. Louis, Hotel Statler, Nov. 4-6. Mr. John H. Hunt, 188 W. Randolph St., Chicago 1, Executive Secretary.

American Society of Clinical Pathologists, Chicago, Oct. 10-16. Dr. A. S. Giordano, 531 N. Main St., South Bend 1, Ind., Secretary.

Association for Research in Nervous and Mental Diseases, New York, Waldorf-Astoria Hotel, Dec. 10-11. Dr. Clarence C. Hare, 700 W. 168th St., New York 32, Secretary.

Association of Military Surgeons of the United States, San Antonio, Texas, Nov. 11-13. Dr. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Indiana State Medical Association, Indianapolis, Oct. 26-28. Mr. Ray E. Smith, 23 E. Ohio St., Indianapolis 4, Executive Secretary.

International College of Surgeons, U. S. Chapter, St. Louis, Kiel Auditorium, Nov. 16-19. Mr. Ralph E. Osborne, 1516 Lake Shore Drive, Chicago, Business Secretary.

Inter-State Postgraduate Medical Association of North America, International Medical Assembly, Cleveland, Public Auditorium, Nov. 9-12. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 25-28. Mrs. M. R. Waller, 512 Medical Arts Bldg., Oklahoma City, Executive Secretary.

Omaha Mid-West Clinical Society, Omaha, Hotel Paxton, Oct. 25-29. Dr. John M. Thomas, 1031 Medical Arts Bldg., Omaha 2, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 10-12. Dr. J. Basora Delfillo, Box 3866, Santurce, Secretary.

Radiological Society of North America, San Francisco, Dec. 5-10. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse 2, New York, Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 7-9. Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Southwestern Medical Association, El Paso, Texas, Oct. 28-30. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Secretary.

Western Surgical Association, St. Louis, Dec. 2-4. Dr. Warren H. Cole, 1853 W. Polk St., Chicago 12, Secretary.

Virginia, Medical Society of, Richmond, John Marshall Hotel, Oct. 18-20. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond 19, Secretary.

GOVERNMENT SERVICES

PUBLIC HEALTH SERVICE

COST OF LONG TERM MENTAL CARE

During 1947 the cost of providing long term hospital care in mental hospitals was approximately \$400,000,000, according to estimates of the Mental Hygiene Division of the Public Health Service. Between 1945 and 1947, expenditures for maintenance in hospitals providing long term care for psychiatric patients increased by \$146,000,000, or approximately 60 per cent of the estimated expenditures for 1945. In terms of the annual cost per patient, or per capita expenditure, the increase was about 50 per cent, from \$480 in 1945 to \$727 in 1947. This increase reflects in large part the increase in the general price level during the period but may also reflect to some degree improvement in the quality of mental hospital care during the postwar period.

The estimates presented here are based on figures from a variety of sources. For state, psychopathic and Veterans Administration neuropsychiatric hospitals these figures are reasonably complete; for county and city hospitals and private hospitals, however, the basic data are somewhat fragmentary; the estimates are in some instances based on the assumption of a constant relationship between annual changes for these two types of hospitals, respectively, and corresponding changes for state hospitals. In view of this situation, estimates of expenditures have been rounded to the nearest million, and those of average daily population to the nearest thousand. Figures on per capita expenditures are based on the initial unrounded absolute numbers.

ADVANCED TRAINING FOR MEDICAL OFFICERS

Six officers of the U. S. Public Health Service have been awarded Rockefeller fellowships for graduate study in public health. They are Surgeons Elton Osborne Jr. and Mary Walton, and Assistant Surgeon Clarence A. Velat, at Johns Hopkins University; Senior Surgeon (R) S. J. Axelrod, at the University of Michigan; Senior Assistant Surgeon George Adams, at Yale, and Senior Assistant Surgeon George A. Spendlove, at Harvard.

Other Public Health Service officers receiving advanced training are Surgeons Samuel C. Ingraham, who is beginning a year's training in radiobiology at the University of Colorado Medical School, Denver; John B. Vander, at the Massachusetts Institute of Technology for part time training in radiobiology; and Senior Surgeon Kirkland C. Brace, at University of Chicago for advanced training in radiobiology. Surgeon Mary A. Diamond is assigned to the Columbia University College of Physicians and Surgeons, New York, for study in neurology and psychiatry; Senior Surgeon Vernam T. Davis is in psychiatric training at William A. White Institute of Psychiatry, New York; Senior Assistant Surgeon Robert B. Dorsen will

attend the University of Pennsylvania for a year's study in obstetrics and gynecology; Senior Assistant Surgeon Rheim M. Jones will attend the New York Postgraduate Medical School for a course in surgery of the eye, and Senior Assistant Robert C. Rodger will study pathology and diagnostic bacteriology at Johns Hopkins University.

FEDERAL GRANTS FOR UNDERGRADUATE COURSES

The U. S. Public Health Service announces that federal grants for undergraduate courses are now being offered to medical schools to foster training of students in the mental aspects of disease. Formerly, grants to medical schools authorized by the National Mental Health Act were used primarily for graduate training in psychiatry. The extension of these grants to the undergraduate field was recommended by the National Advisory Mental Health Council as a means of providing future physicians with the basic knowledge that will help them recognize early symptoms of mental illness, treat cases which do not require the service of a specialist and apply psychiatric treatment to various types of illness.

Applications should be made to the Mental Hygiene Division of the Public Health Service, Washington, D. C., by Oct. 15, 1948. Some selection of schools will be necessary, because of limited funds, although eventually it is expected that all medical schools that desire such assistance may receive grants. The amounts to be allocated to each school selected will be based on the recommendation by the National Mental Health Council, but with the funds now available it will not be possible to grant more than \$37,500 to a school for the first three year period.

DIAGNOSTIC CANCER TESTS

The National Cancer Institute and a group of medical schools and hospitals will cooperate in a program to determine which of the many reported diagnostic tests are dependable, and in refining the most promising tests and in developing new tests. The Director of the National Cancer Institute, Dr. J. R. Heller, states that negotiations leading up to this program have been in progress the past year and have resulted in a tentative program which includes clinical and laboratory studies carried out simultaneously in the cooperating medical schools and hospitals with the necessary coordination and direction centering in the National Cancer Institute. Tests that show promise in the laboratories will first be applied to a small number of thoroughly studied cases and then, if justified, to thousands of persons with and without cancer, particularly to those passing through the United States Public Health Service Medical Center at Hot Springs, Ark., where National Cancer Institute already operates a pilot cancer detection unit.

MISCELLANEOUS

THE GOVERNMENT NEEDS PHYSICIANS

The United States Civil Service Commission announces an examination for filling medical officer positions open in some twenty-eight medical fields ranging from general practice through the various specialties. The positions are located in Washington, D. C., throughout the United States and in the Panama Canal Zone, in such agencies as the Indian Service, Panama Canal Service, United States Public Health Service, Department of the Army, Veterans Administration, Civil Aeronautics Administration, and the Railroad Retirement Board. The salaries range from \$4,479 to \$6,235 a year.

No written test will be required. To qualify, applicants must be graduates of a medical school and must be currently licensed to practice medicine and surgery. For positions paying \$4,479

and \$5,232, applicants must have completed a full internship, either general rotating or in a specialty (this requirement is waived for some positions); and for positions paying \$5,232 and \$6,235, they must have had professional medical experience. Maximum age limits are as follows: for Panama Canal Service, 45 years; for Indian Service, 50 years; for other agencies, 62 years. For persons entitled to veteran preference, the 45 and 50 year age limits are waived to 62 years, and the 62 year age limit is waived without limitation.

Information and application forms may be secured at most first and second class post offices, from Civil Service regional offices, or from the United States Civil Service Commission, Washington 25, D. C. Applications will be accepted in the Commission's Washington office until further notice.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Nutrition Study of Aged.—A nutrition study of older people is being conducted in San Mateo County through the cooperation of the local health department, the College of Agriculture for the University of California at Berkeley, the U. S. Department of Agriculture, the U. S. Public Health Service and the California Department of Public Health. Federal agencies are supplying a team of experts who will be guided by an advisory committee representing various California health and agricultural agencies. The study will attempt to determine the nutritional status of a selected group of institutionalized and noninstitutionalized aged persons.

COLORADO

Professor Schmidt Goes to New Orleans.—Dr. Ernest A. Schmidt has resigned as professor and head of the department of radiology of the University of Colorado Medical Center to take up new duties at Touro Infirmary, New Orleans. The department of radiology will be under the administration of a departmental committee until a new professor and head of the department can be appointed.

Research on Epilepsy.—The University of Colorado Medical School, Denver, has received a grant of \$5,000 from the Easter Seal fund of the Colorado Division of the National Society for Crippled Children and Adults for treatment and research in the field of epilepsy. The university's program will be headed by Dr. Harriot H. Hunter of the Epilepsy Clinic. The grant provides for a director, honorariums for two medical assistants and a social worker and for administrative services and supplies. The program calls for a registry of epileptics and a work shop to provide group therapy for parents as well as patients.

DISTRICT OF COLUMBIA

Appoint Professor of Urology.—Dr. Lloyd G. Lewis, associate professor of urology, has been appointed professor of urology at the Georgetown University Medical Center. A graduate of Johns Hopkins University School of Medicine, Baltimore, 1928, Dr. Lewis served as an instructor, associate, and assistant professor of urology there and assistant visiting urologist at Johns Hopkins University Hospital, 1933-1942. He served in the army during World War II as chief of the urologic section of the Walter Reed General Hospital. He is now a consultant in genitourinary surgery to the Secretary of War and Walter Reed General Hospital.

DELAWARE

Dedicate the Governor Bacon Health Center.—This center, which is a part of the Delaware State Hospital at Farnhurst, was dedicated September 27. It will accommodate 282 children in various psychotic states, epileptics without psychoses, crippled children or children waiting for assignment to foster homes, and 266 adults, who are epileptic, alcoholic or senile and bedridden. The center will provide modern diagnostic and therapeutic facilities. Its objective is complete or partial rehabilitation of children on the statewide basis for all classes of people. It will also be an educational and training center and will closely affiliate with the New York and Pennsylvania universities, the Alfred I. DuPont Institute, Delaware State Hospital and all general hospitals and the health and welfare agencies of the state.

ILLINOIS

Two Day Institutes on Venereal Disease.—The Illinois Department of Health, through its divisions of venereal disease control and public health nursing, is sponsoring three two-day institutes on venereal disease control. The first is scheduled for November 15-16 at the Kaskaskia Hotel in LaSalle, the second on November 17-19 at the St. Nicholas Hotel in Springfield and the third on November 23-24 at the Hotel Emerson in Mt. Vernon. Some of the subjects to be discussed are: Facilities for the Treatment of Venereal Diseases, Health Education and Venereal Diseases Control, and Drugs Used in the Treatment of Gonorrhea.

Evanston Hospital Expands.—Three additions are planned for the Evanston Hospital. Ground-breaking ceremonies October 1 marked the beginning of a six story addition to the west end of the main building and a two story connection with the Abbott Memorial Laboratory. The new building will add ninety-two beds. The second building in the expansion program will be a maternity building, and the third will provide facilities for psychiatric care and tuberculous patients, a pediatrics division, a dental clinic and a tumor clinic in connection with the outpatient department.

Chicago

Dr. Harvey to Address Institute of Medicine.—Dr. A. McGee Harvey, professor of medicine, Johns Hopkins University School of Medicine, Baltimore, will deliver the annual lecture before the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine October 22 at the Palmer House on "Some Physiological Experiments of Nature in the Field of Neuromuscular Function. Potassium Deficiency, Potassium Intoxication, Myasthenia Gravis."

Prize for Paper on Surgery.—The Chicago Surgical Society awards an annual prize for a manuscript describing experimental work in one or both fields of experimental and clinical surgery. Applicants must be residents of Cook County. All identification marks of the author and of the hospital or institution in which the work was performed must be eliminated from the manuscript. The paper should be submitted to the Secretary, Dr. C. B. Pruestow, Room 910, 30 N. Michigan Avenue, not later than March 1, 1949, accompanied by a sealed envelope bearing on its outside the title of the paper and containing within it the name and address of the author.

Medal Awarded to a Dog.—The National Society for Medical Research on October 1 presented a medal to an experimental animal, a dog, for its part in the advancement of research on cardiovascular surgery. The presentation was made by Dr. Andrew C. Ivy, vice president of the University of Illinois, on a televised program over station WBKB. Seventy-six children in the Chicago area owe their lives to this dog, Caesar, which played a part in the original research at Children's Memorial Hospital. Two former "blue babies" also appeared on the program. The presentation was part of a health education program of the American Medical Association developed in cooperation with the educational committee of the Illinois State Medical Society and the National Society for Medical Research.

Eight Professors Appointed.—Appointment of eight physicians to positions of professorial rank on the faculty of the University of Illinois College of Medicine have been announced: Dr. S. Howard Armstrong Jr., has been appointed professor of medicine. A graduate of Princeton University, Princeton, N. J., and Harvard Medical School, Boston, 1937, Dr. Armstrong now serves as chairman of the department of medicine at Presbyterian Hospital. Drs. William S. Hoffman and Robert Eugene Johnson have been named professorial lecturers in physiology. Dr. Hoffman serves as director of biochemistry at Cook County Hospital Laboratories and Hektoen Institute for Medical Research. Dr. Johnson holds the position of director of research at the Army Medical Nutrition Laboratory. Drs. Samuel A. Leader and Harry Slobodin have been appointed to the faculty with the rank of clinical assistant professor of radiology. Dr. Leader, a graduate of the University of Chicago and Rush Medical College, is chief of diagnostic x-ray at Vaughn Unit, Veterans Administration Facility, Hines. Dr. Slobodin, a graduate of Columbia University and New York University College of Medicine, New York, has served as chief of the department of radiology at the Veterans Hospital since 1942. Dr. Rudolph G. Novick, director of the Illinois Society for Mental Hygiene, has been appointed clinical assistant professor of psychiatry. Joseph E. Bourque, Ph.D., has been appointed an assistant professor of physiology. He previously taught at Wayne University College of Medicine, Detroit. Dr. James A. Campbell has received an appointment as assistant professor of medicine. A graduate of Knox College, Galesburg, Ill., and Harvard Medical School, Boston, he now serves as assistant attending physician at Presbyterian Hospital.

IOWA

Otolaryngology Conference.—The State University of Iowa College of Medicine, Iowa City, is sponsoring a conference in otolaryngology November 29-December 3. Guest speakers will be Drs. Kenneth M. Day, Pittsburgh; French K. Hansel, St. Louis; Frederick T. Hill, Waterville, Maine; Paul H. Holinger, Chicago; Gordon D. Hoople, Syracuse, N. Y.; Julius Lempert, New York, and James H. Maxwell, Ann Arbor, Mich. Enrollment is limited to 25, and the registration fee is \$75. Inquiries and applications should be addressed to Dr. J. T. McClintock, Director of Postgraduate Studies, Room 259, Medical Laboratory Bldg., Iowa City.

Public Health Appointment.—Dr. Ralph H. Heeren, formerly of the Oklahoma City Health Department, has taken over duties as director of Preventable Diseases and Venereal Disease for the Iowa State Health Department. He succeeds Dr. Carl F. Jordan, resigned. Dr. Heeren obtained his medical degree from the State University of Iowa College of Medicine, Iowa City, 1934, and did graduate work at Western Reserve University, Cleveland, and at Harvard School of Public Health, Boston. He has taught medical bacteriology at the State University of Iowa, Western Reserve and Tulane University of Louisiana School of Medicine, New Orleans. He has had experience in state health work in Iowa, Louisiana and Oklahoma.

MICHIGAN

Record Attendance.—Registration records were broken at the annual meeting of the Michigan State Medical Society in Detroit, September 22-24. A total of 3,382 attended the three day postgraduate conference, 2,734 of which were doctors of medicine.

Dr. Stevenson Appointed Professor of Obstetrics.—Dr. Charles S. Stevenson, formerly of Boston, has been appointed professor of obstetrics and gynecology and head of the department at Wayne University College of Medicine, Detroit. Dr. Stevenson received his medical degree at Johns Hopkins School of Medicine, Baltimore, and was resident gynecologist at the hospital and resident obstetrician at the Boston Lying-In Hospital.

Sight-Saving Program.—The Michigan State Department of Health reports that poor eyesight handicaps 1 out of every 5 Michigan school children. Last year the department undertook a vision conservation program to help local agencies and groups in the prevention and correction of sight defects of children and improving the visual environment in school and in homes. The department's vision consultant was invited into 27 counties and to teacher's colleges, institutes and workshops. Nine counties carried on a program in which the sight of all school children was tested. Of 33,585 children tested, 3,864 showed some sight defects. In addition, there were 2,748 children who were under treatment or who had undergone treatment for eye conditions. Equipment, material and the services of the vision consultant are available on request through the local health department or, where there is no such department, directly through the Michigan Department of Health, Lansing 4, Mich.

MINNESOTA

Lecture on Gastric Secretion.—The second annual Phi Delta Epsilon medical lectureship will be given at the University of Minnesota, medical sciences amphitheater, November 3, 8 p. m., by Franklin Hollander, Ph.D., head of the Gastroenterology Research Laboratory of the Mount Sinai Hospital, New York, on "Studies in Gastric Secretion." The lecture is presented under the combined auspices of the University of Minnesota Medical School, the Phi Delta Epsilon undergraduate fraternity and the Minnesota Phi Delta Epsilon graduate club.

NEW YORK

Open New Psychiatric Wing.—Strong Memorial Hospital's new \$1,000,000 psychiatric wing at Rochester was opened for study and treatment of the emotionally ill August 27. Present services for a time will be restricted to outpatient visits daily.

Postgraduate Courses.—The Medical Society of the State of New York, in cooperation with the New York State Health Department, has arranged a postgraduate lecture at the University Club, Syracuse, October 19, at 8:30 p. m. Dr. Isadore Snapper, New York, will speak on "Osseous Manifestations of Medical Diseases." A series of postgraduate lectures have been arranged for the Schoharie County Medical Society on Tuesday afternoon at 4 o'clock at the Cobleskill High School Building, Cobleskill.

Oct. 19—Chester E. Clark, Syracuse, Gynecology in General Practice.
Nov. 2—Richard S. Farr, Syracuse, Disabilities of the Foot and Ankle.
Nov. 16—Ethel G. Cermak, Albany, Rheumatic Fever.
Nov. 30—Alfred Weintraub, New York, The Ophthalmoscope in the Diagnosis of General Diseases.

On November 17 the Sullivan County Medical Society will hear Dr. Paul A. Bunn, Syracuse, speak on "Recent Advances in Therapy" at the Monticello Hospital, Monticello, 8:30 p. m.

The Onondaga County Medical Society will hear Dr. Alexander Brunschwig, New York, speak on "Radical Surgery for Cancer" at a meeting at the University Club, Syracuse, November 9, 8:30 p. m.

Advisory Council to Aid in State Mental Health Program.—An advisory council, representing various aspects of community activity in the fields of psychiatry, social welfare, general medicine and public health, has been appointed to advise

the Department of Mental Hygiene in the expansion of New York State's mental health program. It will meet monthly with the commissioner of mental hygiene, Dr. Frederick MacCurdy. Dr. Howard W. Potter, professor of psychiatry at the Long Island College of Medicine, is chairman of the council. Other members are: Dr. Edward A. Sharp, New York; Dr. S. Bernard Wortis, New York, representing the Medical Society of the State of New York; Dr. J. Lawrence Pool, New York; Dr. L. Whittington Gorham, Albany; Marian F. McBee, executive secretary of the New York Committee on Mental Hygiene; Ralph King, president of the New York State County Welfare Association, and Henry J. A. Collins, judge of the Children's Court in Nassau County. Among the projects on which the council will aid the commissioner and his staff is a more comprehensive educational program to promote mental health of children. The council will also assist the department in securing cooperation with hospitals and developing plans for improving care of mentally ill patients in general hospitals.

New York City

Personal.—Dr. I. Paul Train was recently promoted to assistant professor of surgery at New York Medical College and assistant attending surgeon at Flower-Fifth Avenue Hospital. He is a graduate of New York Medical College, Flower and Fifth Avenue Hospitals, 1930.

First Harvey Lecture.—Dr. Cecil J. Watson, professor of medicine, University of Minnesota Medical School, will deliver the first Harvey Lecture on "Urobilin and Stercobilin" before the members of the Harvey Society in affiliation with the New York Academy of Medicine October 26, at 8:30 p. m.

Wilson Memorial Lecture.—Dr. Anton J. Carlson, professor emeritus of physiology, University of Chicago, will lecture on "Diet and the Span of Life," October 19 at 4:15 p. m., in the North Lounge of Hunter College. This is the second in the annual Margaret Barclay Wilson Memorial Lecture series, established by the department of physiology, health and hygiene, Hunter College, as a tribute to the memory of its first chairman.

Symposium on Rehabilitation.—The Association of Military Surgeons of the United States, Metropolitan New York Chapter, will hold a Symposium on Rehabilitation at the New York University Bellevue Institute of Rehabilitation and Physical Medicine, October 27 at 8:30 p. m. The speakers will be:

Howard A. Rusk, The Place of Rehabilitation in the Practice of Medicine.

Donald A. Covalt, Rehabilitation—Its Place in the General Hospital.

Morris Grayson, Emotional Factors in Physical Disability.

George G. Deaver, Rehabilitation of Motor Disabilities.

Sixteenth Series of Salmon Lectures.—Torbjørn O. Caspersson of the Nobel Institute, Stockholm, will give the sixteenth series of the Thomas William Salmon Lectures at the New York Academy of Medicine on the evenings of November 8-10, under the general title of "Cell Function and Cell Growth in Normal and Pathologic Conditions, Studied by Quantitative Cytochemical Procedures." Dr. Caspersson, biophysicist and biochemist, is professor of medical cell research and genetics and director of the Institute for Cell Research of the Medical Nobel Institute in Stockholm.

OHIO

Tuberculosis Clinics.—The Westside County Tuberculosis Clinic opened September 21 as an outpatient department of Sunny Acres Sanatorium, Cleveland, in cooperation with the Sixth Health District. Open daily, it will operate as a diagnostic and case-finding clinic. Another clinic is now under construction on the east side of the city and will be finished within a year. These new clinics together with the new Cleveland Health Center to be opened by the end of 1948, the other health centers now operating and the three county mobile x-ray units will provide Cleveland with excellent facilities for tuberculosis case finding.

Course in Chest Diseases.—The Ohio State Medical Association is offering a postgraduate course in Diagnosis and Treatment of Chest Diseases at the Elks Home, Chillicothe, October 21, beginning at 2 p. m. Physicians from all sections of the state are invited. Speakers will be:

John H. Skavlem, Cincinnati, Pathogenesis and Clinical Considerations.
William L. Potts, Columbus, Laboratory Aids in Diagnosis of Pulmonary Diseases.

David W. Heusinkveld, Cincinnati, Chest Films.

Joseph B. Stocklen, Cleveland, Planning the Management of the Tuberculous Patient.

Maurice G. Buckles, Columbus, Developments in Chest Surgery.

Sidney E. Wolpaw, Cleveland, Drug Therapy.

Arnold B. Kurlander, Columbus, Community Tuberculosis Control Measures.

John H. Skavlem, Cincinnati, Panel Discussion.

OREGON

State Medical Election.—At the meeting of the Oregon Medical Society, September 15-18, Dr. Leslie S. Kent, Eugene, was installed as president and Dr. James E. Buckley, Portland, was named president-elect; Dr. Werner E. Zeller, Portland, secretary, and Dr. Allen O. Pitman, Hillsboro, treasurer.

Appointed to Board of Health.—The Oregon State Board of Health has appointed Dr. George C. Gibson, Ravenna, Ohio, as director of the cancer section of the state department of health. Dr. Gibson received his medical degree from Harvard Medical School, Boston, in 1943, served with the U. S. Public Health Service Marine Hospital, Brighton, Mass., and for two years at the Ponderville Hospital at Walpole.

PENNSYLVANIA

To Direct State Bureau of Laboratories.—Arthur P. Hitchens, Lieutenant Colonel (M.C.), U. S. A., retired, formerly professor of public health and preventive medicine at the University of Pennsylvania School of Medicine, Philadelphia, has been appointed to succeed Dr. Claude P. Brown as director of the Bureau of Laboratories of the Pennsylvania State Department of Health. Dr. Brown has been connected with the bureau for seven years and will devote his entire time to clinical pathology.

Philadelphia

University Appointment.—Phyllis A. Bott, Ph.D., has been made professor of physiologic chemistry and chairman of the department at the Woman's Medical College of Pennsylvania. Dr. Bott, a graduate of the University of Wisconsin, Madison, became associate professor at Woman's Medical College in 1941 and in 1946 succeeded Marion Fay, Ph.D., professor of physiologic chemistry, as chairman of the department when Dr. Fay was made dean.

Strittmatter Award.—The Philadelphia County Medical Society has presented its Dr. I. P. Strittmatter Award for 1947 to Dr. Pascal F. Lucchesi "in recognition of his outstanding service to medical education and to the public health in Philadelphia" lately as medical director and superintendent of the Philadelphia General Hospital and formerly as medical director and superintendent of the Philadelphia Hospital for Contagious Diseases. The award, a gold medal and scroll, was made possible through the generosity of Dr. Strittmatter to foster high ideals and distinguished service to the credit of the medical profession in the interest of humanity.

TENNESSEE

Personal.—Dr. John L. McGehee, professor and chief of the division of surgery at the University of Tennessee College of Medicine, Memphis, and surgeon-in-chief at John Gaston Hospital, retired September 1, but will retain his private practice. He has been associated with the university for forty-six years.

Dr. Blassingame Appointed Department Head.—Dr. Charles D. Blassingame, associate professor of otolaryngology since 1934, has been appointed professor and head of the department of otolaryngology at the University of Tennessee College of Medicine, Memphis, succeeding Dr. W. Likely Simpson, who has resigned to devote more time to private practice. Dr. Blassingame is a graduate of Vanderbilt University School of Medicine, Nashville, 1916, and is on the staff of Baptist Memorial Hospital.

TEXAS

Spanish-Speaking Physicians.—Jacob M. Gershberg of New York, president of the International Spanish Speaking Association of Physicians, Inc., was the chief speaker at a banquet in his honor given by the El Paso chapter, September 17. Dr. Gershberg has recently formed new chapters in Juarez, Mexico; Beverly Hills, Calif.; Reno, Nev., and Hot Springs, Ariz., bringing the number of chapters to fifty-nine.

New Postgraduate School at Houston.—The University of Texas' postgraduate school of medicine was established in Houston, September 18, and Dr. Randolph L. Clark Jr., director of the M. D. Anderson Hospital for Cancer Research, Houston, was appointed dean and professor of surgery. The school will ultimately be located in a separate building in the Texas Medical Center. Dr. Clark, a graduate of the Medical College of Virginia, Richmond, in 1932, has been director of the hospital since early in 1947. From 1938-1940 he was on the staff of Mayo Clinic, Rochester, Minn. He was consulting surgeon for the Mississippi State Charity Hospital, Jackson, and Mississippi State Tuberculosis Sanitarium. During the late war, he was chief of the surgical service of the Army Fair-Forces Technical Training School.

WEST VIRGINIA

Heart Association Meeting.—The fall meeting of the West Virginia Heart Association will be held at Morgantown October 29. A scientific program will be presented in the afternoon and evening, and a dinner is being arranged in connection with the meeting. Dr. T. Duckett Jones, Boston, will be the principal speaker. Requests for hotel and dinner reservations should be addressed to the secretary, Dr. Fred Richmond, Beckley.

Public Health Appointment.—The division of maternal and child health of the state health department announces the acceptance by Dr. Walter W. Point, Charleston, of appointment as part time obstetrical consultant. He will assist the division in planning the state maternal and child health program. Dr. Point has also been appointed by the public health council as a member of the advisory committee to the division of cancer control of the state health department. He will fill the vacancy caused by the death of Dr. J. Ross Hunter, Charleston.

GENERAL

Postgraduate Medical Assembly.—The International Medical Assembly of the Inter-State Postgraduate Medical Association of North America will meet in the Public Auditorium, Cleveland, November 9-12, under the presidency of Dr. Herman L. Kretschmer, Chicago. A program of diagnostic clinics, addresses and exhibits have been planned. The registration fee is \$5.

Premedical Chapter Installed.—The Premedical Club of the University of Miami was recently installed as the Florida Gamma Chapter of Alpha Epsilon Delta, national premedical honor society, an affiliate of the American Association for the Advancement of Science and a member of the Association of College Honor Societies. Alpha Epsilon Delta has about 7,200 members in the forty-seven chapters at colleges throughout the United States.

Announce Urology Award.—The American Urological Association offers an annual award of \$1,000 (first prize of \$500, second prize \$300 and third prize \$200) for essays on the result of clinical or laboratory research in urology. Competition is limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals. The first prize essay will appear on the program of the forthcoming meeting of the association to be held at the Biltmore Hotel, Los Angeles, May 16-19, 1949.

Grants For Vitamin Studies.—The National Vitamin Foundation, 150 Broadway, New York, will award grants-in-aid, totaling \$16,000, to Western Reserve University School of Medicine, Cleveland; University of Vermont College of Medicine, Burlington; Massachusetts Institute of Technology, Cambridge, and the University of Southern California School of Medicine, Los Angeles. Among the investigations to be undertaken are the nutritional status of school children, the relationship between pyridoxine (vitamin B₆) and fat metabolism, and the effects of time elements on the utilization of water-soluble vitamins.

Pediatric Conference.—A postgraduate conference in pediatrics will be held November 8-13 at the University of Texas Medical Branch, Galveston, under the auspices of the University of Texas Child Health Program and in cooperation with the Maternal Child Health Division of the Texas State Board of Health. Among the subjects to be discussed are the newborn infant, endocrine disturbances, pediatric psychiatry, pediatric surgery and infectious diseases. Addresses will be given by the University of Texas staff members and the following guest speakers: Drs. Robert L. Jackson, Iowa City; Leo Kanner, Baltimore; J. Cyril Peterson, Nashville, Tenn.; Edith L. Potter, Chicago; Orvar Swenson, Boston, and Lewis K. Sweet, Washington, D. C.

Tuberculosis Association Maintains Culture Bank.—The National Tuberculosis Association reports that since 1946, when its Culture Bank was set up at the Trudeau Laboratory of the Trudeau Sanatorium, Trudeau, N. Y., 384 cultures had been supplied investigators in eighteen foreign countries, twenty-five states and the District of Columbia. Scientists engaged in research are being supplied with standard strains of the tubercle bacillus. Requests for cultures are filled without charge, but investigators are requested to report their research to the National Tuberculosis Association. The laboratory is part of Trudeau Foundation for the Clinical and Experimental Study of Pulmonary Diseases. Recently several strains of streptomycin-resistant tubercle bacilli have been added to the bank. Dr. Edward L. Trudeau, for whom the laboratory is named, is believed to have grown the first culture of the tubercle bacilli in this country, after Robert Koch isolated the germ in 1882. Dr. Trudeau was born one hundred years ago October 5.

Association of Blood Banks Report.—The First Annual Meeting of the American Association of Blood Banks, held in Buffalo, August 26-28, was attended by registrants representing twenty-eight states and six foreign countries. The following officers were elected. Dr. Ralph G. Stillman, New York, president; Dr. Thomas H. Seldon, Rochester, Minn., president-elect; Miss Marjorie Saunders, Dallas, Texas, secretary, and Mr. W. Quinn Jordan, Phoenix, Ariz., treasurer. The officers and directors for the eight districts, into which the country is divided, will constitute the board of directors, which will be the governing policy-making body of the association. Membership in the association is available to ethical, independently operating and policy-making, nonprofit institutions. Associate institutional memberships are also available to hospitals not having a blood bank but interested in blood banking. Individual memberships are open to all persons.

Incidence of Poliomyelitis Declines.—According to the U. S. Public Health Service, a total of 1,699 cases of poliomyelitis was reported during the week ending September 25, as compared with 1,840 (corrected figure) for the preceding week, 881 in 1947 (the five year median) and 1,425 in 1946 for the corresponding week. With a decline of 231 cases, and in view of the lateness of the season, a continued weekly decline may now be expected throughout the remainder of the year. Sharp decreases were reported in the North Central States, especially in Ohio (149 to 58), South Dakota (55 to 23) and Indiana (42 to 25). The incidence declined in California from 326 to 310. The three states which have reported more than 1,000 cases to date are California (2,982), North Carolina (2,171) and Texas (1,455). The cumulative total to September 25 is 17,653, as compared with 6,498 in 1947, 17,206 in 1946 and a five year median of 8,882 for the corresponding period. Fragmentary data from a few areas indicate, on the basis of a low case-fatality ratio, that the disease has been mild.

Dr. Stanley Awarded Franklin Medal.—Wendell M. Stanley, Ph.D., biochemist of San Francisco, will receive one of the Franklin medals of the Franklin Institute of the State of Pennsylvania "in recognition of his discovery that a virus can be a nucleoprotein rather than a living organism, thereby establishing a significant turning point in virus research; and also of his development of an effective centrifuge-type influenza vaccine by means of which the intensity of future influenza epidemics may be greatly lessened." Dr. Stanley, formerly of the Rockefeller Institute and newly appointed professor and head of the department of biochemistry at the University of California Medical School, Berkeley-San Francisco, and director of the Virus Laboratory of the University of California, received his Ph.D. degree from the University of Illinois, Chicago, 1929, and has been the recipient of a number of awards, including the \$1,000 Prize of the American Association for the Advancement of Science in 1936 and the Isaac Adler Prize of the Medical School of Harvard University, 1938; he was Nobel Laureate in Chemistry in 1946.

Nutrition Awards.—The American Institute of Nutrition will make three awards to investigators at its annual meeting next spring. The 1949 award of \$1,000 established by Mead Johnson and Company will be given to the laboratory (non-clinical) or clinical research worker in the United States or Canada who has published during 1948 the most meritorious scientific report dealing with the field of the B-complex vitamins. While the award will be given primarily for publication of specific papers, it may be recommended that it be made to a worker for contributions over an extended period. The Borden Award in Nutrition, \$1,000 and a gold medal, made available by the Borden Company Foundation, Inc., will be given in recognition of distinctive research by investigators in the United States and Canada which has emphasized the nutritive significance of the components of milk or of dairy products. The award will be made primarily for publication of specific papers. The Osborne and Mendel Award of \$1,000, established by the Nutrition Foundation, Inc., for the recognition of outstanding accomplishments in the general field of exploratory research in the science of nutrition, will be given to the investigator who is judged to have made the most significant published contribution in the year. While preference will be given to research workers in the United States and Canada, investigators in other countries are not excluded. Nominations for these awards must be in the hands of the chairman of the nominating committee by Jan. 15, 1949. They should be accompanied by such data relative to the accomplishment of the nominee and his research as will facilitate the task of the committee of judges. Nominating committee chairman for the Mead Johnson Award is Harold H. Williams, Cornell University, Ithaca, N. Y.; for the Borden Award, James M. Orten, Wayne University College of Medicine, Detroit 26, and for the Osborne and Mendel Award, D. W. Woolley, Rockefeller Institute for Medical Research, New York.

Military Surgeons Meeting.—The Association of Military Surgeons of the United States will meet at the Gunter Hotel, San Antonio, Texas, Nov. 11-13, under the presidency of Brig. General Edgar Erskine Hume, Washington, D. C. In addition to addresses by the Surgeons General among others, forum lectures will be given by:

Capt. Harold L. D. Kirkham, U.S.N.R. (Ret.), and Lt. Comdr. S. Baron Hardy, U.S.N.R., Houston, Texas, Military Use of a Cross-Leg Skin Flap.
Lt. Col. Kleinsasser, Dallas, Texas, Subphrenic and Liver Abscesses.
Lt. Col. Kenneth E. Fletcher, Randolph Field, Texas, Movement of the Sick and Wounded by Air.
Capt. Paul E. Spangler, U.S.N., Corpus Christi, Texas, Some Observations on Pilonidal Cyst.
Edward H. Cushing, Washington, D. C., Research in the Veterans Administration.
Edgar J. Poth, Galveston, Texas, Promotion of Healing Following Intestinal Surgery.
Harry Eagle, Bethesda, Md., Chemotherapeutic and Prophylactic Use of Penicillin.
Col. William J. Kennard, Washington, D. C., Aircrew Maintenance: A Problem of Aviation Preventive Medicine.
Lt. Comdr. Philip B. Phillips, U.S.N., Pensacola, Fla., The Psychiatrist in a Dispensary.
Comdr. James G. Bryson Jr., U.S.N., Corpus Christi, Texas, Ocular Manifestations in Intracranial Injury.
C. Ferd Lehmann, San Antonio, Texas, Auto-Sensitization Dermatitis.
Maj. Gen. Charles L. Williams, Bethesda, Md., Control of Murine Typhus Fever.
Col. Rufus L. Holt, Washington, D. C., Progress in Virus and Rickettsial Diseases.

Panel discussions will be given Friday afternoon.

Cancer Symposium at Annual Meeting.—A symposium will be held at the annual meeting of the American Cancer Society, Hotel Commodore, New York, November 6-7. The program is as follows:

The Cancer Problem Today: Charles S. Cameron, New York, A World Problem; John R. Heller Jr., Bethesda, Md., A National Problem; Daniel A. Blain, Washington, D. C., Are There Dangers in Lay Cancer Propaganda?; Herbert L. Lombard, Boston, Creating Awareness. Treatment—Recent Advances: Bertram V. A. Low-Beer, San Francisco, Diagnosis of Breast Tumors by Radioactive Phosphorus; John H. Lawrence, Berkeley, Calif., Treatment of Diseases of the Hematopoietic System with Artificial Radioactivity; Rulon W. Rawson, New York, Application of Radioactive Materials in the Management of Thyroid Cancer; Norman Treves, New York, Castration as a Therapeutic Agent in Cancer of the Male Breast; Ira T. Nathanson, Boston, Hormone Therapy in Cancer of the Female Breast. Lung Cancer: Theodore F. Hillish, Washington, D. C., Results of Community Wide Chest X-Ray Programs in Cancer Case Finding; John R. McDonald, Rochester, Minn., and Peter A. Herbut, Philadelphia, Cytologic Diagnosis of Cancer of the Lung; E. W. Alton Ochsner, New Orleans, Prospects of Improved Control of Lung Cancer. Cancer Research and Education and the Cancer Problem in General Medical Practice: Harry Eagle, Bethesda, Md., Progress in Cancer Research at the National Cancer Institute; Samuel C. Harvey, New Haven, Conn., Present Status and Future Plans of Cancer Education in Our Medical Schools; Maurice T. Root, West Hartford, Conn., Cancer Problems of a Family Doctor.

A summary by each chairman will be given at the end of each session, and discussion from the floor will be invited. Speakers at the dinner November 6 will be Dr. L. Henry Garland, San Francisco, "Present Potentials of Radiation Therapy," and Dr. Shields Warren, Washington, "What Can We Expect from Atomic Energy?"

CORRECTION

Dr. Wells at Anderson Hospital.—Dr. Benjamin B. Wells, formerly dean of the University of Arkansas School of Medicine, Little Rock, is director of research and head of the department of clinical pathology at the M. D. Anderson Hospital for Cancer Research at Houston, not at Galveston as was stated in THE JOURNAL, Feb. 21, p. 567. The hospital is a branch of the University of Texas and is the state cancer hospital.

Marriages

MILTON FRANCIS BROWN, Shaker Heights, Ohio, to Miss Ruth Virginia Best at New Brighton, Pa., June 27.

HERBERT MCKELDEN SMITH JR., Staunton, Va., to Miss Anne Noble Sims of Portland, Maine, July 10.

WILLIAM F. KNOFF, Syracuse, N. Y., to Miss Nancy Nettleton Edwards of Cazenovia, July 10.

JAMES W. CORRELL, Fairfield, Conn., to Miss Cynthia Cannon Hewitt in New York, August 7.

JOHN GREGG HAND to Miss Irma Virginia Gross, both of Philadelphia, September 4.

SELWYN BRODY to Mrs. Jeanne Davis Carey, both of New York, August 5.

Deaths

John Gordon Wilson * professor emeritus of otolaryngology at the Northwestern University Medical School in Chicago, died at the Putnam Memorial Hospital in Bennington, Vt., August 13, aged 81, of cerebral hemorrhage. Dr. Wilson was born in Edinburgh, Scotland, Dec. 10, 1866. He received his M.B. and C.M. degrees from the University of Edinburgh Faculty of Medicine in 1890. After studying in Vienna and Berlin he settled in Glasgow, Scotland, where he was appointed surgeon to the Bellahouston Dispensary and the dispensary of the Victoria Infirmary. In 1901 he accepted the position of instructor in the anatomy department of the University of Chicago and in 1905 became assistant professor of anatomy. In 1908 he joined the faculty of Northwestern University Medical School as professor of otology, in 1924 was named professor of otolaryngology and chairman of the department and in 1945 retired with the rank of professor emeritus. He was a past president and secretary of the Otological Research Committee, past president of the Institute of Medicine of Chicago and the American Otological Society. A specialist certified by the American Board of Otolaryngology, Dr. Wilson was a member of the American Laryngological Association and American Laryngological, Rhinological and Otological Society. He was a fellow of the American College of Surgeons, an honorary member of the Harvey Society of New York, a member of the Illinois State Medical Society, the American Association for the Advancement of Science and the National Research Council. During World War I he served as a captain in the Canadian Expeditionary Forces. He was formerly otolaryngologist on the staffs of the Passavant Memorial and Wesley Memorial hospitals in Chicago. Dr. Wilson was the author of a history of the medical schools of America in the 18th Century, and a medical history of Edinburgh University in the same period as well as of numerous other publications.

Arthur Mullin Wright * Earleville, Md.; born in Lyndonville, N. Y., in 1879; Cornell University Medical College, New York, 1905; in 1907 joined the faculty of the New York University College of Medicine as assistant in surgery, becoming clinical professor in 1916, associate professor in 1920, George David Stewart professor in 1933 and chairman of the department in 1942; retired in August 1946 with the rank of professor emeritus, after thirty-nine years of teaching; member of the Medical Society of the State of New York, New York Surgical Society, American Surgical Society, International Surgical Association and the New York Academy of Medicine; a fellow and for many years a member of the board of governors of the American College of Surgeons; specialist certified by the American Board of Surgery; an officer in the medical corps of the U. S. Army during World War I, serving as commanding officer of Base Hospital number 1, the Bellevue Unit; later attached to the French Medical Corps, for which service he was made Chevalier of the Legion of Honor of France; interned at St. Vincent's Hospital and from 1912 to 1930 was on its attending staff; for many years director of surgery at the French Hospital; joined Bellevue Hospital in 1907 and in 1927 was made director of the third surgical division, a position he held until his retirement from the hospital; served on the consulting staffs of the Doctors Hospital in New York, Mount Vernon (N. Y.) Hospital, St. Joseph's Hospital in Yonkers, St. Agnes Hospital in White Plains, St. Luke's Hospital in Newburgh, N. Y., and the Central Islip (N. Y.) State Hospital; member of the board of directors of the Union Hospital, Elkton; at a dinner held in his honor in February 1946 by alumni, students and other friends, it was announced that the dais for the auditorium of the New York University-Bellevue Medical Center would bear his name; in 1946 New York University conferred on him the honorary degree of doctor of science; died in New York June 24, aged 68.

Vivean Visscher Wood * St. Louis; born in Pettis County, Mo., in 1886; Washington University School of Medicine, St. Louis, 1912; assistant professor of otolaryngology at St. Louis University School of Medicine; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Oto-Laryngology, American Laryngological Association, American Laryngological, Rhinological and Otological Society and the American Otological Society; fellow of the American College of Surgeons; served during World War I; on the staffs of the Jewish, Bethesda, De Paul and St. Luke's hospitals and Deaconess Home and Hospital; consulting otolaryngologist at St. Mary's Group of Hospitals; died in University City, Mo., June 20, aged 61, of heart disease.

Walter John Farrell * Johnson City, N. Y.; born in Chicago in 1890; Fordham University School of Medicine, New York, 1917; also a graduate in pharmacy; past president of the Broome County Medical Society; member of the American Public Health Association, New York State Health Officers Association and the Association of Military Surgeons of the United States; for many years health officer and school physician; served during World War I; on the consulting staffs of the Ideal Hospital in Endicott, N. Y., and Binghamton (N. Y.) City Hospital; affiliated with Our Lady of Lourdes Memorial Hospital in Binghamton, N. Y., and the Charles S. Wilson Memorial Hospital, where he died July 25, aged 57, of mesenteric thrombosis.

Marshall Clark Keith, Cheyenne, Wyo.; born in Carroll County, Ill., April 12, 1874; Rush Medical College, Chicago, 1896; member of the American Medical Association; for many years secretary of the Wyoming State Medical Society; formerly secretary of the Wyoming State Board of Medical Examiners and secretary and state health officer of the Wyoming Department of Public Health; for many years treasurer of the school board; served as county physician; scientific editor of the Wyoming Section of *Colorado Medicine*; author of a book of poems; affiliated with Natrona County Memorial Hospital, where he died in July, aged 74, of uremia.

Augustus William Anderson, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1943; served during World War II; formerly an intern and resident in orthopedics at the Charity Hospital, where he died July 21, aged 29, of brain tumor.

Herbert Aaron Citron, Newport, Ky.; University of Cincinnati College of Medicine, 1948; interned at the Michael Reese Hospital in Chicago; died in the Children's Hospital, Boston, July 6, aged 23, of Hodgkin's disease.

George Ingersoll Dakin, Grosse Pointe, Mich.; Michigan College of Medicine and Surgery, Detroit, 1891; died in Alexander Blain Hospital, Detroit, July 21, aged 78, of cerebral hemorrhage.

Perry Cleveland Farnell, Branford, Fla.; Medical College of the State of South Carolina, Charleston, 1912; member of the American Medical Association; died June 5, aged 63, of coronary occlusion.

Karl L. Fife, Lordsburg, N. M.; University of Colorado School of Medicine, Denver, 1935; served overseas during World War II; on the staff of the Lordsburg Hospital; died May 23, aged 45, in a glider crash.

James Surran Fleming * Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1913; served in France during World War I; past president of the Memphis Urologic Society; died July 6, aged 57.

Frederick Biggers Fox, Freeburg, Ill.; St. Louis University School of Medicine, 1906; died in St. Elizabeth's Hospital, Belleville, July 21, aged 76, of cerebral hemorrhage.

Michael Leo Gallagher, Oak Park, Ill.; Rush Medical College, Chicago, 1899; served on the staffs of various Veterans Administration hospitals; died at Downey July 14, aged 79, of coronary occlusion.

Frank Hackett Gilreath, Lexington, Va.; University of Nashville (Tenn.) Medical Department, 1898; member of the American Medical Association and the Medical Society of the State of North Carolina; died June 19, aged 79, of cardiovascular disease.

Nathan Bernard Glassman * Boston; College of Physicians and Surgeons, Boston, 1916; died June 8, aged 58, of agnogenic myeloid metaplasia.

Victor Maurice Gore * Tucson, Ariz.; Washington University School of Medicine, St. Louis, 1908; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; affiliated with the Pima County General Hospital and the St. Mary's Hospital and Sanatorium, where he died May 30, aged 63, following gastric resection for peptic ulcer.

William C. Kiser, Vale, N. C.; Southern Medical College, Atlanta, 1889; died June 20, aged 81, of heart disease.

George Albert Landes, Parsons, Kan.; Rush Medical College, Chicago, 1904; member of the American Medical Association; served during World War I; affiliated with Mercy Hospital; died June 24, aged 67, of coronary heart disease.

William Polk Longmire Sr. * Sapulpa, Okla.; Hospital College of Medicine, Louisville, 1904; formerly affiliated with the Indian Service; fellow of the American College of Surgeons; on the associate staff, Morningside Hospital, Tulsa, and consulting staff, St. John's Hospital, Tulsa; on the staff of City Hospital, where he died June 1, aged 66, of heart disease.

John MacLean, Boston, Baltimore Medical College, died with Massachusetts General Hospital and Massachusetts Hospital, where he died June 21, aged 72, of cancer.

A. Magraw, Gilman City, Mo.; Lincoln (Neb.) College of Chiropractic, 1899; died in Marion, Ind., 88.

C. Makepeace, Hackensack, N. J.; Kentucky School of Medicine, Louisville, 1901; formerly associated with the U. S. Health Service; died June 28, aged 65.

Richard Robert Mason, North Conway, N. H.; Harvard School of Medicine, 1901; member of the American Medical Association, Massachusetts Medical Society and the New England Obstetrical and Gynecological Society; fellow of the College of Surgeons; affiliated with Massachusetts Hospital and Boston City Hospital, where he died aged 72, of hypertension and arteriosclerotic heart disease.

Grant McDade, East Liverpool, Ohio; Ohio University, Columbus, 1905; died May 8, aged 75.

Under H. McLeod & Aberdeen, N. C.; Baltimore College, 1890; died June 19, aged 77.

F. McMillan, Charlevoix, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, member of the American Medical Association; served as coroner; affiliated with Charlevoix Hospital, where he died aged 69, of coronary occlusion and myocardial infarction.

Dr. A. A. J. Miller, Baltimore; Baltimore University of Medicine, 1892; formerly assistant superintendent of the public schools; died in Union Memorial Hospital aged 88, of gastric and prostatic hemorrhage.

Frederick Miller, Auburn, N. Y.; Syracuse University College of Medicine, 1897; died in St. Petersburg, Fla., aged 74.

Hugh Morgan, Wilkes-Barre, Pa.; College of Physicians and Surgeons, Baltimore, 1891; member of the American Medical Association; died May 27, aged 90, of hypostatic pneumonia and arteriosclerosis.

H. Morrison, Hartsville, Ind.; Kentucky School of Medicine, Louisville, 1893; served as county health commissioner; died in Memorial Hospital, Greensburg, June 29, aged 68, of cerebral hemorrhage.

Alph Aloysius Mullen, Houston, Texas; Jefferson Medical College of Philadelphia, 1893; member of the American Medical Association; fellow of the American College of Surgeons; died in St. Joseph's Infirmary June, aged 81, of bronchopneumonia.

James Muthart, Jermyn, Pa.; Jefferson Medical College of Philadelphia, 1906; died May 12, aged 66, of carcinoma of the right lung.

Trimble Palmer & Pine Bluff, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1905; two terms served on the state examining board; died in Memorial Hospital May 25, aged 69, of coronary occlusion.

Yer Paretzky & Huntington Park, Calif.; University of Moscow Faculty of Medicine, Russia, 1917; member of the Jean Trudeau Society; for many years chest clinician for Los Angeles City and Los Angeles County health departments; member of the tuberculosis division of the Los Angeles County Hospital; died May 17, aged 53.

William O. Phillips, Newburgh, Ind.; Pulte Medical College, Homopathic, Cincinnati, 1900; served during World War I; major, medical reserve corps, not on active duty; died in Pasadena, Calif., May 20, aged 69, of carcinoma of the bile duct.

Charles Felix Prairie & Massena, N. Y.; Syracuse University College of Medicine, 1906; secretary and past president of the St. Lawrence County Medical Society; served during World War I; president of the board of education; president of the Massena National Bank; on the staff of the Massena (N. Y.) Memorial Hospital and the A. Barton Hepburn Hospital in Ogdensburg, where he died June 30, aged 63, of carcinoma of the lower esophagus.

Julian McGruder Robinson, Danville, Va.; University College of Medicine, Richmond, 1899; member of the American Medical Association and the Southern Surgical Association; fellow of the American College of Surgeons; affiliated with Memorial Hospital; died June 28, aged 73.

Thomas Bell Rodham, Scranton, Pa.; Medico-Chirurgical College of Philadelphia, 1897; died June 15, aged 80, of cerebral hemorrhage.

John Christian Serkland, Rothsay, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1909; member of the American Medical Association; served on the board of education and as health officer and mayor of Rothsay; affiliated with St. Luke's Hospital in Fargo, N. D., where he died May 9, aged 75, of coronary thrombosis.

Eubert Verner Simons, Spring Valley, Minn.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1902; died May 27, aged 74, of cardiac failure.

Samuel Alexander Springwater & Los Angeles; Memphis (Tenn.) Hospital Medical College, 1894; member of the Illinois State Medical Society; died May 14, aged 78.

Lawrence Lorraine Stepp & Fort Lauderdale, Fla.; University of Pennsylvania School of Medicine, Philadelphia, 1917; died May 30, aged 56, of carcinoma of the lung.

Irl Thomas, Ashland, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; member of the American Medical Association; for many years affiliated with the Veterans Administration, serving on the staffs of various Veterans Administration hospitals; died in the Veterans Administration Hospital, Louisville, June 21, aged 56.

Louis Monroe Tomlinson & Harveyville, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1913; past president of the Wabaunsee County Medical Society; served overseas during World War I; died in Topeka, July 1, aged 59.

Mark La France Underwood, Little Rock, Ark.; Marion-Sims College of Medicine, St. Louis, 1898; served on the staff of the State Hospital; died May 29, aged 72, of congestive heart failure.

George Edgar Vaughan, Winnebago, Minn.; College of Physicians and Surgeons of Chicago, 1895; died in Rochester, Minn., May 31, aged 83, of calcareous aortic stenosis and hypertrophy of the prostate.

James R. Vermillion, Princeton, W. Va.; Maryland Medical College, Baltimore, 1900; member of the American Medical Association; died June 20, aged 76, of arteriosclerosis.

Jay Herbert Wallahan, Corning, Iowa; St. Louis College of Physicians and Surgeons, 1897; member of the American Medical Association; died June 4, aged 82, of cerebral hemorrhage.

Edward J. Weitenberner, Detroit; Detroit College of Medicine, 1899; died June 25, aged 71.

Francis M. Wilmer, Winfield, Kan.; College of Physicians and Surgeons of Chicago, 1896; member of the American Medical Association; died June 22, aged 77.

William David Wolfe & Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1934; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; served in New Guinea and the Philippines during World War II; affiliated with South Baltimore General and Johns Hopkins hospitals; died in Sinai Hospital June 29, aged 37, of acute monocytic leukemia.

William Vincent Woods & Indianapolis; Indiana University School of Medicine, Indianapolis, 1929; associate professor of orthopedic surgery at his alma mater; specialist certified by the American Board of Orthopaedic Surgery, Inc.; attending orthopedic surgeon to Methodist, St. Francis and St. Vincent's hospitals; died June 3, aged 45, of coronary thrombosis.

Edwin Sayre Woodyard, Pennsboro, W. Va.; Medical College of Virginia, Richmond, 1925; served in France during World War I; died June 14, aged 50, of coronary thrombosis.

Charles Clinton Yarbrough, Memphis, Tenn.; Tennessee Medical College, Knoxville, 1893; vice president of the Wayne County (Mich.) Medical Society in 1901 and 1902; died in the Memphis Eye, Ear, Nose and Throat Hospital June 11, aged 79, of cerebral hemorrhage.

Joseph R. Zicarelli, New York; Long Island College Hospital, Brooklyn, 1909; member of the American Medical Association; affiliated with New York Eye and Ear Infirmary, New York Post-Graduate Hospital and St. Vincent's Hospital, where he died June 28, aged 65.

Edgar Nelson Zinn & Fort Dodge, Iowa; Chicago College of Medicine and Surgery, 1909; also a graduate in pharmacy; past president of the Webster County Medical Society; affiliated with St. Joseph Mercy Hospital, where he died May 29, aged 61, of carcinoma of the colon.

Deaths

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Karl L. Fife, Lordsburg, N. M.; University of Colorado School of Medicine, Denver, 1935; served overseas during World War II; on the staff of the Lordsburg Hospital; died May 23, aged 45, in a glider crash.

James Surran Fleming * Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1913; served in France during World War I; past president of the Memphis Urologic Society; died July 6, aged 57.

Frederick Biggers Fox, Freeburg, Ill.; St. Louis University School of Medicine, 1906; died in St. Elizabeth's Hospital, Belleville, July 21, aged 76, of cerebral hemorrhage.

Michael Leo Gallagher, Oak Park, Ill.; Rush Medical College, Chicago, 1899; served on the staffs of various Veterans Administration hospitals; died at Downey July 14, aged 79, of coronary occlusion.

Frank Hackett Gilreath, Lexington, Va.; University of Nashville (Tenn.) Medical Department, 1898; member of the American Medical Association and the Medical Society of the State of North Carolina; died June 19, aged 79, of cardiovascular disease.

Nathan Bernard Glassman * Boston; College of Physicians and Surgeons, Boston, 1916; died June 8, aged 58, of agnogenic myeloid metaplasia.

Victor Maurice Gore * Tucson, Ariz.; Washington University School of Medicine, St. Louis, 1908; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; affiliated with the Pima County General Hospital and the St. Mary's Hospital and Sanatorium, where he died May 30, aged 63, following gastric resection for peptic ulcer.

William C. Kiser, Vale, N. C.; Southern Medical College, Atlanta, 1889; died June 20, aged 81, of heart disease.

George Albert Landes, Parsons, Kan.; Rush Medical College, Chicago, 1904; member of the American Medical Association; served during World War I; affiliated with Mercy Hospital; died June 24, aged 67, of coronary heart disease.

William Polk Longmire Sr. * Sapulpa, Okla.; Hospital College of Medicine, Louisville, 1904; formerly affiliated with the Indian Service; fellow of the American College of Surgeons; on the associate staff, Morningside Hospital, Tulsa, and consulting staff, St. John's Hospital, Tulsa; on the staff of City Hospital, where he died June 1, aged 66, of heart disease.

Hector John MacLean, Boston; Baltimore Medical College, 1908; affiliated with Massachusetts General Hospital and Massachusetts Memorial Hospital, where he died June 21, aged 72, of heart disease.

Jodia A. Magraw, Gilman City, Mo.; Lincoln (Neb.) Medical College of Cotner University, 1899; died in Macon June 18, aged 88.

Frank C. Makepeace, Hackensack, N. J.; Kentucky School of Medicine, Louisville, 1906; formerly associated with the U. S. Public Health Service; died June 28, aged 65.

Nathaniel Robert Mason, North Conway, N. H.; Harvard Medical School, Boston, 1901; member of the American Medical Association, Massachusetts Medical Society and the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; affiliated with Massachusetts General Hospital and Boston City Hospital, where he died May 3, aged 72, of hypertension and arteriosclerotic heart disease.

Willard Grant McDade, East Liverpool, Ohio; Ohio Medical University, Columbus, 1905; died May 8, aged 75.

Alexander H. McLeod † Aberdeen, N. C.; Baltimore Medical College, 1896; died June 19, aged 77.

Fraley F. McMillan, Charlevoix, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; member of the American Medical Association; served as county coroner; affiliated with Charlevoix Hospital, where he died June 29, aged 66, of coronary occlusion and myocardial infarction.

Charles A. A. J. Miller, Baltimore; Baltimore University School of Medicine, 1892; formerly assistant superintendent of Baltimore public schools; died in Union Memorial Hospital July 4, aged 88, of gastric and prostatic hemorrhage.

Albert Frederick Miller, Auburn, N. Y.; Syracuse University College of Medicine, 1897; died in St. Petersburg, Fla., June 17, aged 74.

Aston Hugh Morgan, Wilkes-Barre, Pa.; College of Physicians and Surgeons, Baltimore, 1891; member of the American Medical Association; died May 27, aged 90, of hypostatic pneumonia and arteriosclerosis.

James H. Morrison, Hartsville, Ind.; Kentucky School of Medicine, Louisville, 1893; served as county health commissioner; died in Memorial Hospital, Greensburg, June 29, aged 81, of cerebral hemorrhage.

Joseph Aloysius Mullen, Houston, Texas; Jefferson Medical College of Philadelphia, 1893; member of the American Medical Association; fellow of the American College of Surgeons; died in St. Joseph's Infirmary June, aged 81, of bronchopneumonia.

Lewis James Muthart, Jermyn, Pa.; Jefferson Medical College of Philadelphia, 1906; died May 12, aged 66, of carcinoma of the right lung.

John Trimble Palmer † Pine Bluff, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1905; for two terms served on the state examining board; died in Davis Hospital May 25, aged 69, of coronary occlusion.

Meyer Paretzky † Huntington Park, Calif.; University of Kharkov Faculty of Medicine, Russia, 1917; member of the American Trudeau Society; for many years chest clinician for the Los Angeles City and Los Angeles County health departments; member of the tuberculosis division of the Los Angeles General Hospital; died May 17, aged 53.

William O. Phillips, Newburgh, Ind.; Pulte Medical College, Homeopathic, Cincinnati, 1900; served during World War I; major, medical reserve corps, not on active duty; died in Altadena, Calif., May 20, aged 69, of carcinoma of the common bile duct.

Charles Felix Prairie † Massena, N. Y.; Syracuse University College of Medicine, 1906; secretary and past president of the St. Lawrence County Medical Society; served during World War I; president of the board of education; president of the Massena National Bank; on the staff of the Massena (N. Y.) Memorial Hospital and the A. Barton Hepburn Hospital in Ogdensburg, where he died June 30, aged 63, of carcinoma of the lower esophagus.

Julian McGruder Robinson, Danville, Va.; University College of Medicine, Richmond, 1899; member of the American Medical Association and the Southern Surgical Association; fellow of the American College of Surgeons; affiliated with Memorial Hospital; died June 28, aged 73.

Thomas Bell Rodham, Scranton, Pa.; Medico-Chirurgical College of Philadelphia, 1897; died June 15, aged 80, of cerebral hemorrhage.

John Christian Serkland, Rothsay, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1900; member of the American Medical Association; served on the board of education and as health officer and mayor of Rothsay; affiliated with St. Luke's Hospital in Fargo, N. D., where he died May 9, aged 75, of coronary thrombosis.

Eubert Verner Simons, Spring Valley, Minn.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1902; died May 27, aged 74, of cardiac failure.

Samuel Alexander Springwater † Los Angeles; Memphis (Tenn.) Hospital Medical College, 1894; member of the Illinois State Medical Society; died May 14, aged 78.

Lawrence Lorraine Stepp † Fort Lauderdale, Fla.; University of Pennsylvania School of Medicine, Philadelphia, 1917; died May 30, aged 56, of carcinoma of the lung.

Irl Thomas, Ashland, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; member of the American Medical Association; for many years affiliated with the Veterans Administration, serving on the staffs of various Veterans Administration hospitals; died in the Veterans Administration Hospital, Louisville, June 21, aged 56.

Louis Monroe Tomlinson † Harveyville, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1913; past president of the Wabunsee County Medical Society; served overseas during World War I; died in Topeka, July 1, aged 59.

Mark La France Underwood, Little Rock, Ark.; Marion-Sims College of Medicine, St. Louis, 1898; served on the staff of the State Hospital; died May 29, aged 72, of congestive heart failure.

George Edgar Vaughan, Winnebago, Minn.; College of Physicians and Surgeons of Chicago, 1895; died in Rochester, Minn., May 31, aged 83, of calcareous aortic stenosis and hypertrophy of the prostate.

James R. Vermillion, Princeton, W. Va.; Maryland Medical College, Baltimore, 1900; member of the American Medical Association; died June 20, aged 76, of arteriosclerosis.

Jay Herbert Wallahan, Corning, Iowa; St. Louis College of Physicians and Surgeons, 1897; member of the American Medical Association; died June 4, aged 82, of cerebral hemorrhage.

Edward J. Weitenberner, Detroit; Detroit College of Medicine, 1899; died June 25, aged 71.

Francis M. Wilmer, Winfield, Kan.; College of Physicians and Surgeons of Chicago, 1896; member of the American Medical Association; died June 22, aged 77.

William David Wolfe † Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1934; specialist certified by the American Board of Dermatology and Syphilology; member of the American Academy of Dermatology and Syphilology; served in New Guinea and the Philippines during World War II; affiliated with South Baltimore General and Johns Hopkins hospitals; died in Sinai Hospital June 29, aged 37, of acute monocytic leukemia.

William Vincent Woods † Indianapolis; Indiana University School of Medicine, Indianapolis, 1929; associate professor of orthopedic surgery at his alma mater; specialist certified by the American Board of Orthopaedic Surgery, Inc.; attending orthopedic surgeon to Methodist, St. Francis and St. Vincent's hospitals; died June 3, aged 45, of coronary thrombosis.

Edwin Sayre Woodyard, Pennsboro, W. Va.; Medical College of Virginia, Richmond, 1925; served in France during World War I; died June 14, aged 50, of coronary thrombosis.

Charles Clinton Yarbrough, Memphis, Tenn.; Tennessee Medical College, Knoxville, 1893; vice president of the Wayne County (Mich.) Medical Society in 1901 and 1902; died in the Memphis Eye, Ear, Nose and Throat Hospital June 11, aged 79, of cerebral hemorrhage.

Joseph R. Zicarelli, New York; Long Island College Hospital, Brooklyn, 1909; member of the American Medical Association; affiliated with New York Eye and Ear Infirmary, New York Post-Graduate Hospital and St. Vincent's Hospital, where he died June 28, aged 65.

Edgar Nelson Zinn † Fort Dodge, Iowa; Chicago College of Medicine and Surgery, 1909; also a graduate in pharmacy; past president of the Webster County Medical Society; affiliated with St. Joseph Mercy Hospital, where he died May 29, aged 61, of carcinoma of the colon.

DENMARK

(From Our Regular Correspondent)

COPENHAGEN, Sept. 9, 1948.

The Teaching of the History of Medicine

How profoundly ignorant we all were of the history of medicine when we passed our final examinations! And what a boon it would have been if from the outset we had been equipped with that perspective and sense of proportion which only a solid grounding in this subject can give! We would have learned that what successive generations of physicians have hailed as epoch-making discoveries have been dismissed later as trifles or even as fallacies. These reflections must have been in the minds of the men who, under the auspices of the Danish manufacturing chemists, have started the publication of a new periodical, *Medicinsk Forum*. This gift to every Danish physician and chemist must not be regarded as a sly attempt on the part of wholesale manufacturing chemists to push their wares under the guise of scientific publications. This new periodical, which is to appear ten times a year, contains no advertisements. One of its editors, Dr. E. Jacobsen, is responsible for the modern side of medicine, while his co-editor, Dr. E. Gotfredsen, deals with its history. In a series of articles on the reception given to great discoveries in medicine, the reader is shown how thorny is the path of the pioneer (witness the fate of Semmelweis in connection with puerperal fever). The discovery of the stethoscope was given a more appreciative greeting and the Danes, at any rate, were quick to honor its discoverer.

The Early Treatment of Mental Disease

Dr. H. I. Schou, whose association with the Dianalund Sanatorium for Nervous Ailments has helped make his well deserved standing in Denmark as a psychiatrist, has lately made a forceful appeal to his countrymen to face what he bluntly calls a scandal. It concerns the neglect of the early rational treatment of light psychoses whose victims are neglected till they have become incurable. He is at present engaged on a statistical study of the costs to the community in 1944 and 1946 of the so-called nervous ailments. Though his study is not completed, he has already come to the conclusion that these ailments are more costly than cancer, tuberculosis, rheumatism or infantile paralysis. At present the Dianalund Sanatorium is the only institution of its kind in Denmark which provides for the treatment of incipient mental disease. With its 115 beds, it is incapable of satisfying all the needs of a country with a population of 4,500,000. To be sure, there are various other hospitals and asylums for which annexes are at present being planned for the "open" care of borderland cases of mental disease, but, with the housing problem in its present phase, the obstacles to the realization of all these plans are indeed great. What makes the situation tantalizing is that, according to Dr. Schou, between 75 and 85 per cent of all the cases of periodic depression can be cured by shock treatment in two to three months if taken in time, whereas when neglected such depression will last three to six months.

Mental Hygiene

The National Mental Hygiene Association has begun to publish a journal. The first number contains an article on "The Risk of Insanity in Denmark," in which Dr. K. H. Fremming gives a summary of a study which he has recently made of the population of the island of Bornholm. This study, carried out in the period 1938-1945, deals with the 5,500 persons who were born in Bornholm in the eighteen eighties. At the time of this investigation, all the survivors of this group were over the age of 50 and were therefore more or less beyond the range of hereditary mental diseases. Dr. Fremming found that up to the age of about 55 in 4 per cent of this cross section of a Danish community mental disease had developed. Schizophrenia accounted for 0.9 per cent and the manic-depressive diseases between 1 and 2 per cent, women in this category being twice as numerous as men. Epilepsy and mental disease due to

syphilis were about equally frequent, in each case affecting 3 out of every thousand persons. About 1 per cent of the population suffered from "psychogenic" mental disease mainly due to extraneous circumstances. More than 1 per cent were mentally defective, and at least 3 per cent were psychopathic. In other words, in the whole of Denmark there are, according to Dr. Fremming, at least 120,000 psychopathic and about 100,000 neurasthenic persons. In this last category women outnumber men in the ratio of 15 to 10. When all these categories are run into one, it will be seen that about 12 per cent of Danes are psychically abnormal or are, or have been, insane. According to a pamphlet recently issued by the National Mental Hygiene Association, every third hospital bed in Denmark is devoted to mental disease. In addition to the 11,000 mental patients in hospitals there are some 14,000 insane patients not in hospitals and some 16,000 who at some time or other have been insane. With these and other impressive statistics, the National Association appeals to the public for funds and other help in making better provision for the organized prevention and treatment of mental disease throughout Denmark.

The Clothing of Asylum Patients

The *Journal of the Danish Medical Association* has printed an exchange of views on the subject of the clothing of patients in asylums. A correspondent complains that the uniforms with which an asylum equips its patients make them look like a cross between a clown and a convict. How can they avoid an inferiority complex in this apparel when their friends come to visit them? Another correspondent, representing the authorities responsible for this state of affairs, defends it with the rather meager plea that plans for the reform of the clothing of lunatics in asylums "will be realized as soon as the clothing situation permits."

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, Sept. 6, 1948.

The Rh Factor in Brazilian Cities

Drs. Mario P. de Mesquita and Vera Leite Ribeiro, of the blood bank of the Fernandes Figueira Pediatric Hospital, published a paper about the hematology of the Rio de Janeiro population, some of which have been reported in previous letters. The new paper deals with sensitization by the Rh factor and the etiology of fetal erythroblastosis. By immunizing guinea pigs with subcutaneous injections of pure stroma of red blood cells of Rhesus monkeys (*Macaca mulatta*), the writers were able to produce potent agglutinating Rh serums, proving, it appears, that the main fraction of the Rh antigen is found in the cellular stroma itself. Accordingly, the hypothesis of the exclusive passage of whole red cells through the placental barrier which has been frequently advanced to explain the production of Rh agglutinins seems unnecessary. To do this, the erythrocytes were separated, washed in isotonic sodium chloride solution and lysed in double distilled water. The stroma thus obtained was repeatedly washed until the supernatant fluid did not show any trace of albumin detectable by the Heller ring test and until the smears, prepared with the sediment and stained by the May-Grünwald-Giemsa method, did not reveal any complete red cell when examined microscopically under 1,500 diameter magnification.

The second part of the paper dealt with the immunization of guinea pigs to yield Rh antibodies; Drs. Mesquita and Ribeiro report a new technic. The inactivated serums of 25 normal adult guinea pigs, diluted to 1 to 4, was used for the agglutinating tests with 2 per cent suspensions of rhesus red cells in final dilutions from 1 to 5 to 1 to 80. The citrated blood of the monkeys was first filtrated through sterilized gauze to retain the clots, if any, and then centrifuged and washed, the centrifugation and washing being repeated several times. After each centrifugation the separated red cells were mixed with

more isotonic sodium chloride solution and transferred to another tube, the sediment containing some stroma and broken red cells being abandoned in the first tube. The washing of the red cells was continued until the supernatant fluid did not show the slightest trace of albumin. By this technic, a much higher sensibility of Rh agglutinins was disclosed at 5 C. than at 37 C., which confirms the previous findings of Diamond and Abelson. In addition, absorption tests disclosed that such enhanced sensitivity derives fundamentally from specific properties of Rh agglutinins and not from a nonspecific cold agglutination. The production of serum by the new technic is still under study before its utilization for diagnostic purposes.

While still using serums of American manufacture, the writers reported that among 220 white adults, Brazilian-born residents of Rio de Janeiro selected for blood donors at the Fernandes Figueira Hospital, the Rh factor reaction was negative in 28, or 13.2 per cent. Previous results reported recently in Brazil in similar conditions by Ottensooner and Pasqualini (São Paulo, 1934, 47 examinations), by Lacaz, Ferreira, Malone and Yahn (Rio de Janeiro, 1946, 445 examinations), again by Ottensooner and Pasqualini (São Paulo, 1947, 191 examinations) and by the present writers (Rio de Janeiro, 1947, 212 examinations) had shown negative percentages of 15.0, 14.2, 14.7 and 13.2, respectively, which gives the general average negative rate of 13.93 per cent for the combined sample of 1,115 persons from the two greatest cities of Brazil.

Treatment in 300 Cases of Tetanus

Dr. Joaquim M. Fonseca is head of a department of São Francisco de Assis Hospital, where most cases of tetanus of this city are treated. Since 1925, Dr. Fonseca has attended 300 cases of tetanus. He recently reviewed at the National Academy of Medicine the results of treatment. With more use of the specific therapy, the results began to improve, from year to year, so much so that at present 83 per cent of the patients are cured. According to the point of entrance of the infection, Dr. Fonseca classifies as "severe" the cases of tetanus of the hand, the throat, the uterus and the umbilicus and those connected with the puerperal state, particularly the ones following induced abortion. The routine treatment is based on the early use of the specific therapy with a dosage of 5,000 American units for adult and 3,000 for children.

Number of Physicians in Brazil

A recent publication of the Bureau of National Statistics disclosed the number of physicians in Brazil. According to the 1946 figures, there is an average of one physician to 2,780 inhabitants. The worst situation is that of the states of Maranhão, Piauí and Paraíba, which had less than one physician for 10,000 inhabitants. Of the 16,939 physicians engaged in professional activity in the whole country, 60.4 per cent were in the twenty largest cities with an aggregate population of more than 6,000,000. Out of 10,235 physicians practicing in the twenty largest cities, 6,264 worked in the cities of Rio de Janeiro and São Paulo, with an aggregate population of more than 3,700,000.

Dr. J. Bruno Lobo

In the last five years Dr. J. Bruno Lobo has been the radiologist of the Department of Gynecology of Rio de Janeiro University. Toward the beginning of last year he began to feel the early symptoms of radiodermatitis of the feet. With the aggravation of the illness, the case was definitively diagnosed as one of radiodermatitis. An American specialist suggested to Dr. Lobo that he go to the United States, where treatment of the disease could be done with great hope of success. But the trip and the treatment involve great expenditure of money, which young Dr. Lobo is unable to afford. The case became news through reports in the press, arousing public interest so much that the Brazilian Congress is passing legislation to appropriate the sum needed by Dr. Lobo for his treatment.

Correspondence

NEUROGENIC BLADDER OF POLIO-MYELITIS

To the Editor:—In the Aug. 14, 1948 issue of *THE JOURNAL* under "Current Medical Literature" on page 1485 is abstracted an article by W. L. Valk from the *Kansas Medical Society Journal* (49:93-136 [March] 1948), entitled "Neurogenic Bladder of Poliomyelitis." The author stated that cystometric studies on patients with this disease made during the study of poliomyelitis seen at the University of Kansas Medical Center during the 1946 epidemic had convinced him that a type of neurogenic bladder is produced by the disease and that this communication represents the first description of cystometric studies of the neurogenic bladder of poliomyelitis.

In the *Journal of Urology* for June 1936, I published a paper entitled "Urinary Complications In An Epidemic of Poliomyelitis" from the School of Medicine of the University of Southern California and the Urological Department of the Los Angeles General Hospital, based on a study of the epidemic of 1933-1934 in Los Angeles County, in which there were 1,792 cases with a positive diagnosis of poliomyelitis. Eighty per cent of these patients were hospitalized, more than half of them in the early systemic phase of the disease. The incidence of urinary complications was unusually high, and many cystometric studies were made, typical examples of which appear in the paper. Whether or not these were the first cystometrograms made for patients with poliomyelitis presenting symptoms of a neurogenic bladder is not definitely known, but certainly they antedated the work of Dr. Valk.

BURNETT W. WRIGHT, M.D., Nashville, Tenn.

FATAL REACTIONS AFTER AMINOPHYLLINE

To the Editor:—I read with great concern the article by Drs. Bresnick, Woodard and Sageman, *THE JOURNAL*, February 7, page 397, regarding fatal reactions following intravenous administration of aminophylline, and a letter on the subject by Dr. Harold Thomas Hyman in the issue of March 27, page 895. The latter believes that "the deaths are more likely explicable on the basis of 'speed shock.'" The clinicians who do a number of intravenous injections and see them being done have, certainly, a claim to have their say in the matter. I am firmly of opinion that the importance of speed shock in bringing about intravenous fatalities has been unduly exaggerated. Consider the thousands of intravenous injections given by doctors all over the world with rarely a watch before them! In India I have seen intravenous injections in a big hospital given by illiterate ward boys without a watch in their pocket. Their speed of injection can be imagined from their keen desire to finish the work speedily. Yet no fatality due to intravenous injection has ever occurred there! With due deference to all concerned, I may be allowed to say that speed shock is one of the myths that have been introduced in medicine by ambitious workers. Speed atrocities in intravenous administration must be in enormous numbers per day compared with the fatalities that are known to follow. By this, I do not desire to minimize the importance of speed in intravenous injections. Speed may cause a fatality by its effect on a weak and degenerated myocardium. But ordinarily the speed of an intravenous injection, due to the average bore of the needle used, is not of such a magnitude as to occasion death in a person whose myocardium is not too bad.

A remarkable point in these fatalities is that only certain drugs, like the mercurial diuretics and arsenicals, are notoriously associated with them. This leads one to presume that there is

something in the nature of drugs rather than in the mode of administration that is responsible for death.

Immediate deaths after intravenous injections fall under one of the following heads:

1. Stimulation of the skin by a prick may cause death by reflex inhibition of the heart. I know the case of an infant in whom a pinprick of the toe to take blood for smear examination caused death.

2. Pricking the wall of a vessel by a needle may similarly cause death. In a case, as soon as the needle pierced the vessel wall for taking blood, death ensued.

3. Injections of large amounts of pyrogens. This is probably the cause of death after injections of dextrose.

4. Chemical stimulus to the vessel wall or the endocardium causing reflex inhibition of the heart. This is probably the case in mercurial diuretics, aminophylline, epinephrine and iodine solutions.

5. Anaphylactic shock. This is of the nature of histamine shock. The death after arsenicals is perhaps due to this.

A number of unavoidable factors contribute to intravenous fatalities. Young doctors who have to do intravenous administrations in hospital practice should not feel unnecessarily disturbed and guilty if a mishap occurs. They may thus be prevented from developing "speedphobia" and "speed neurosis" while doing their work.

P. L. DESHMUKH, M.D.,

Hon. Physician,

Medical Dept, Sassoon Hospital,

Poona City, Indian Dominion.

DIAGNOSIS OF TUBERCULOSIS

To the Editor:—I hope you have space to publish a letter which appeared on July 30, 1948 in the *New York Times* and which was also sent to the National Tuberculosis Association. The author, Angela Koenig (Mrs. Robert P. Koenig) of Carmel, Ind., brings up a problem which is of the utmost importance for control and the ultimate eradication of tuberculosis. The means for diagnosing pulmonary tuberculosis are abundant. Unfortunately, a considerable portion of the practicing medical profession still fail to take advantage of them. Mrs. Koenig's letter furnishes a good illustration of such failure.

The Editor
The New York Times

Dear Sir,

Two months ago, five weeks after the birth of my second baby, I was found to be suffering from "moderately advanced" pulmonary tuberculosis. I should not consider this a matter of general interest did I not feel that my experience might serve as a warning and possibly save some other mother from a similar disaster. From what we have now learned about the disease it is apparent to my husband and me that I had been displaying obvious symptoms for some months. Yet, although I had a competent general practitioner as family doctor, was under the care of a good obstetrician and had visited an ear, nose and throat specialist, these symptoms were not correctly diagnosed. I complained to all three doctors of constant tiredness and a persistent cough. In fact, I spent some weeks in bed taking that modern cure-all, penicillin, for an infected sinus, which was judged to be the cause of my cough. It now appears that each doctor thought that one of the others would have taken up with me the possibility of tuberculosis, with the result that in the end none of them mentioned it to me or suggested that I should have an X-ray. Consequently, not only has my own life been endangered, but I have unknowingly exposed my babies to the appalling risks of military tuberculosis and tuberculous meningitis.

Since my illness I have heard of many cases of women breaking down with tuberculosis immediately after childbirth. My experience, and theirs, shows that, despite the magnificent work of the National Tuberculosis Association, much remains to be done. It is not only the general public

which needs to be alerted to the dangers of tuberculosis, but the doctors themselves, and particularly the "specialists" in other branches of medicine, who tend to ignore the possibility of any illness outside their own field. In particular, I feel that the Tuberculosis Association should work to have the chest x-ray made as much a part of standard prenatal care as the blood test is now. And I would urge all prospective mothers to insist on an x-ray, for only thus can they be sure of safeguarding the health of themselves and their families at a time when they are apparently especially susceptible to the tubercle bacillus.

Yours very truly

Education of physicians who see cases of tuberculosis without recognizing them is still one of the most important responsibilities of medical teachers. Mrs. Koenig's letter is timely.

ESMOND R. LONG, M.D.,

Executive Secretary, American Trudeau Society.

Medical Economics

WHAT IS THE LEADING CAUSE OF DEATH?

NOTE.—Summary of a monograph by Frank G. Dickinson, Ph.D., and Everett L. Welker, Ph.D., Director and Associate in Mathematics of the Bureau of Medical Economic Research of the American Medical Association. The monograph has just been published as Bureau Bulletin Number 64.—Ed.

In view of the twenty-two year difference between the average ages at death from the leading "older" causes (heart, cancer, intracranial lesions of vascular origin and nephritis) and from the leading "younger" causes (accidents, pneumonia and influenza, and tuberculosis), the authors question the adequacy of numbers of deaths as the sole measure of the relative importance of the various causes. As an alternative to this traditional measure, they have developed two new measures for ranking the causes of death. These take into consideration the age at death as well as the number of deaths from each cause.

The authors call their two new measures "life years lost" and "working years lost." The number of life years lost from a given cause, say heart diseases, was obtained by multiplying the number of deaths at a given age from that cause by the life expectancy of a survivor of the same age and by then totaling the products for all ages. The unit of measure in this case is one "unrealized" year of life including the retired years as well as the productive years. The second new measure, "working years lost," is based on the working life expectancies of survivors of the same ages as the decedents. This technical term, "working life expectancy," is defined as the average number of years to be lived excluding those before the twentieth and after the sixty-fifth birthdays. The unit of measure here is one "unrealized" year of working life which includes only the working period, ages 20 to 65. Everyone below age 65 has a working life expectancy. The authors have taken a broad view of the potential economic productivity of all persons during the customary working period of life; thus their total of working years lost by death includes the "unrealized" years between ages 20 and 65 of all decedents, even housewives who are not generally classed as gainfully employed.

The authors have applied their two new measures to the seven leading causes of death in 1930, 1935, 1940 and 1945, using the voluminous data gathered and published by the National Office of Vital Statistics (Washington, D. C.). All causes other than the leading seven were grouped together under the caption "All Others," which accounted for 34 per cent of all deaths in 1930 and 26 per cent in 1945. The more complex actuarial concepts and computations involved in the two measures, and a breakdown by race and sex for 1945 only, are presented in two appendixes to the monograph.

During the fifteen year period covered by the study, the average age at death from all causes rose from 49 to 57 years—a testimonial to medical and social progress. Deaths from heart diseases increased from 19 per cent of all deaths in 1930 to 30

per cent in 1945, when "All Others" accounted for only 26 per cent. Deaths due to cancer rose from 9 to 13 per cent; accidental deaths accounted for about 7 per cent in each of the four quinquennial years. Despite the fact that heart diseases killed by far the largest number of persons each year, the authors contend that the evidence is inadequate to warrant the claim that heart diseases can be termed the leading cause of death for all purposes. They point out that the age at death is a necessary factor in gauging the loss to society resulting from the various causes. "Life years lost" and "working years lost" by death were developed as measures of this loss to society, not as measures of the infinite loss of the precious gift of life to the decedent or to the bereaved family. The Bureau hopes to make a second study using similar criteria to measure the loss to society from disability resulting from sicknesses and injuries, both fatal and nonfatal.

When applied to the leading causes of death in 1945, the two new measures produce surprising results. In that year deaths due to heart diseases destroyed 5,800,000 life years, cancer 2,900,000, accidents 2,800,000 and pneumonia 2,100,000. Deaths due to heart diseases were two and one-half times as numerous as deaths due to cancer, four and one-half times as numerous as accidental deaths and more than six times as numerous as deaths due to pneumonia. Despite the $4\frac{1}{2}$ to 1 ratio, the number of life years lost from deaths due to heart diseases was only twice the number of life years lost by accidental deaths. The explanation lies in the average ages at death in 1945—age 68 for heart and age 46 for accidents. The corresponding average future lifetime were 11 and 26 years, respectively. Thus the $4\frac{1}{2}$ to 1 lead of heart over accidents based on number of deaths was reduced to 2 to 1 when "life years lost" was the measure. The comparatively low average age at death from pneumonia in 1945 (46 years) accounted for a similar upgrading of that "younger" cause when ranked by "life years lost."

When the seven leading causes of death were ranked by "working years lost," accidents replaced heart in the number one position. In 1945, a year of nationwide gas rationing, the working years lost from accidental deaths numbered 1,750,000, while those from heart diseases numbered only 1,680,000. Pneumonia ranked third with 1,110,000 years and cancer fourth with 1,040,000 years. The breakdowns by race and sex presented in the appendix reveal that the young white male, who represents the productive and military strength of the country, was the special victim of accidents. In 1940 also, accidents were the number one destroyer of the customary working years of life; they ranked second in 1935 and third in 1930. Heart diseases were one rank below accidents in each of these four years, although the proportion of deaths from all causes which were due to heart diseases climbed from 19 to 30 per cent, while the proportion due to accidents remained at about 7 per cent. Evidently it has been a close race between these two leading causes when their relative importance is measured by working years lost, although pneumonia and tuberculosis outranked them in 1930 and pneumonia was first in 1935. Thus pneumonia has made way for accidents and heart diseases. Again the upgrading of the two "younger" causes is explained by the lower ages at death from these causes; the "unrealized" working years per death were far greater, on the average, for accidents and pneumonia than for heart and cancer. The authors note one statistic on medical progress which is of the utmost significance: in each of the four years studied, not one of the major fatal diseases of childhood was among the seven leaders.

The authors present their two new measures but do not state a preference for one over the other. They do contend that numbers of deaths in a period of declining mortality, longer life and a rapidly aging population cannot measure the loss to society from any one leading cause of death. If the retired, leisure years are a major consideration, then the authors recommend "life years lost" as the better of the two measures. If economic considerations are paramount, then the authors advise the use of their second new measure, "working years lost."

Although the natural causes of death—the physicians' problem—accounted for seven eighths and accidents for one eighth of the "working years lost" from deaths in 1945, the authors emphasize that the layman's role in prolonging life is greater than one eighth for he must be a cooperative patient and he must continue to support medical research and education if the accelerated

rate of medical progress is to be maintained. As noted, the reason for the upgrading of fatal accidents by the second measure is the average age at death from the "older" causes. The fact that these "older" causes account for an increasing proportion of all deaths is an indication of medical progress. If this progress slows down and the average age at death eventually falls, accidental deaths would have to increase sharply in number or the average age at death from accidents would have to decline if that cause were to maintain first place as a destroyer of "unrealized" working years. Actually the average age at death from accidents has increased less since 1930 (4.5 years) than that from either of the other two "younger" causes, pneumonia and tuberculosis. As the authors point out, the real story here is medical progress and not an alarming increase in accidental deaths. In this sense, accidental deaths are a reflection of medical progress mirrored by the second new measure for ranking the leading causes of death.

Physicians not in close touch with mortality statistics will find parts of this monograph, replete with tables and charts, rather difficult yet thoroughly worth while. All physicians, particularly those who plan medical research and health improvement programs and the National Safety Council, other agencies engaged in the battle of accident prevention and public officials who must plan for our nation's health will do well to study the monograph carefully. The actuarial note on zero mortality assumptions in Appendix B will doubtless interest many workers in the field of vital statistics. Actually the answer to the question, "What is the leading cause of death?" is of vital interest to every man, woman and child in America.

All in all this study is a statistician's way of recording medical and social progress. So few die at the younger ages and ultimately die of the "older" causes that the remaining pieces of "unrealized" lifetimes have become very short. The pieces of "unrealized" working lifetimes are even shorter; in fact, they are so short in the case of deaths due to heart diseases in 1940 and 1945 that when these numerous short pieces are strung out end to end they do not stretch out as far as the fewer and longer pieces representing the "unrealized" productive years destroyed by accidental deaths. During recent decades these numerous short pieces have slowly lengthened as life expectancies above middle age have increased. The fact that these pieces have not lengthened more rapidly in recent years is rejected by the authors as proof of the charge that medical science has concentrated on the young to the neglect of the old; it is harder to add one additional year of future lifetime to the schedule of a 67 year old man than to the schedule of one who is only 45. The basic fact which motivated the Bureau's study and which accounts for the results presented in the monograph is that the population has aged, reflecting the cumulative results of medical progress of the past. One strongly suspects, however, that the typical American physician, thinking about his patients one by one, will continue to prize most highly that cure which will postpone the largest number of deaths among his patients.

Medical Motion Pictures

Bilateral Thyrotomy for Carcinoma of the Larynx. 16 mm., color, silent, 500 feet (1 reel), showing time fourteen minutes (sound speed). Prepared by Joseph I. Kemler, M.D., Baltimore. Produced in 1948 by Richard D. Grill, Department of Art, University of Maryland, Baltimore. Procureable on loan from the author, 1908 Eutaw Place, Baltimore 17.

The film shows the surgical technic of a new operation devised by the author for certain cases of carcinoma of the larynx. He states the operation is indicated in chordal tumors situated in the anterior two thirds of the larynx when there is no fixation of the cords. This is a presentation of a controversial new operative procedure but gives no claims as to end results or five year cures. It leans toward conservatism in a field in which the trend is toward more radical surgery. The surgical procedure is fairly well illustrated in color, but the film is titled in black and white stock, throwing either the titles or the operative procedure out of focus during projection. The use of black and white titles and drawings with color surgical photography is not good technic. Photography is good. This production is directed strictly to the specialist in laryngology and would not be of interest to a general medical audience.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Charitable Hospitals: Liability When Delirious Patient Jumps from Window.—The plaintiff sued for damages for the death of her husband, alleged to have been caused by the negligence of the defendant hospital. From a judgment for the plaintiff, the defendant appealed to the court of appeals of Tennessee.

According to the plaintiff's evidence, when her husband was admitted to the defendant hospital about 6 o'clock one evening he was extremely ill with pneumonia, his temperature was 106 F. and he was delirious. He was placed in a bed on the third floor about 3 feet from a window. His brother stayed with him until about 9:30 p. m., and was then told that visiting hours were over and that he must leave. He left under protest, but before leaving he told the nurses that someone should stay in the room or the patient, in his delirium, would try to get out of bed. One of the nurses said "I will tie him in bed if he tries to get up; I will keep him in bed some way." A few hours later, however, he got out of bed, climbed to the nearby window and fell to his death on a concrete porch below. The nurses testified that after the patient's brother left they put up sideboards, administered "sodium luminal" (phenobarbital sodium) and put the patient into restraints, consisting of straps tying his ankles and wrists to the bed.

In testing a hospital's liability for negligence, said the court, there is no distinction in this state between one operated for private gain and one conducted as a charity. In the instant case the defendant's nurses and interns knew that the plaintiff was suffering from pneumonia, had a very high temperature and was so irrational as to want to get out of bed and leave, yet they refused to let his brother stay with him and watch him or stay to see the doctor about getting a special nurse for him. They realized the patient was in danger from his delirium, said that they would tie him if he tried to get up and, by restraints, undertook to keep him from getting out of bed and harming himself, but they failed to fasten the restraints securely or at least to see that his restraints did not come loose. Despite the danger they failed to keep someone in his room to watch him, but left him in his delirium only a step from an unfastened and unguarded window. The admitted fact is, said the court, that the restraints did come loose, which could hardly have happened if they had been properly fastened and if the nurses had continually watched to keep them fastened. We think, the court continued, that the jury could have reasonably found, as it did, that the defendant failed to exercise ordinary care and diligence.

The defendant contended, however, that the patient's act of jumping out of the window was so unusual and extraordinary that it was altogether unforeseeable, that it was only a possibility and not a probability, and that the defendant cannot be charged with negligence for not foreseeing and guarding against such an act. The court said that the majority rule holds that if the defendant's conduct created an unreasonable risk of harm to the plaintiff the defendant is liable for all the injuries within the reasonable range of such risk, whether they could have been foreseen or not. The particular harm which actually befell the patient need not have been foreseeable; it is enough that some such harm of a like general character was reasonably foreseeable as a likely result of defendant's failure to use due care to keep him in bed and to protect him against getting out of the window in his delirium. We think, the court concluded, that the jury could well have found that the patient's act was not so unusual or extraordinary as to be beyond range or reasonable expectation but that it was a thing which might reasonably have been expected to occur in view of his condition. Common experience shows that patients in such condition often jump or fall out of upper story windows of hospitals.

Finally the defendant contended that there was no evidence to show that the patient might not have died of pneumonia even if he had had no accident. There is no merit in such a contention, said the court. There was ample evidence to support the jury's finding that the patient's death was caused by the injuries he sustained in the accident. The fact that he was ill, even if it could be said he might later have died of such illness, did not prevent the defendant's negligence from being the legal or proximate cause of his death. Accordingly the judgment in favor of the plaintiff was affirmed and the hospital was held liable in damages for the patient's death.—*Spivey v. St. Thomas Hospital, 211 S. W. (2d) 450 (Tenn., 1948).*

Evidence: Physician's Qualifications to Testify Concerning Roentgenograms.—The defendant was charged with murder and convicted of manslaughter, from which conviction he appealed to the Supreme Court of Mississippi.

During the trial of the case the court admitted in evidence roentgenograms showing the course of the bullet through, and the place of its lodgment in, the head of the deceased. The defendant contended that this was reversible error because it was not shown, with sufficient certainty, that the roentgenograms were accurately made or that Dr. Butler, who explained them to the jury, had the required skill and knowledge to interpret them.

The victim was taken to the McComb City Hospital, McComb, Miss., immediately after being shot in the head with a pistol by the defendant. He lived only a short time and after his death the roentgenograms in question were taken. They were made, with the machine and instruments used in the hospital for that purpose by Dr. Moore, assisted by Dr. Butler, both professionally connected with the hospital, and were preserved as a record of the hospital. Dr. Butler graduated from the University of Tennessee Medical College in 1939 and later served an internship at Grace Hospital, Detroit. He then practiced medicine in the Marine Corps for three and a half years and had engaged in the general practice of medicine since 1941. He testified that he had never taken a technical course of study directed particularly to making or reading roentgenograms, but he had studied both subjects as a part of his medical course and his practical experience therein, both as a student and in the practice of medicine, had been extensive. He also testified that the roentgenograms in question were accurately taken and interpreted and there was no evidence to the contrary.

The Supreme Court said that the process of roentgenography is now well established as a method of securing a reliable representation of the bones of the human body and the location of growths and foreign substances in the body. They are admissible on authentication which satisfies the court that the thing or person is fairly portrayed, and the question of the competency of roentgenograms is a preliminary one addressed to the sound discretion of the court. We cannot say, the Supreme Court concluded, that the trial court erred in admitting these roentgenograms in evidence.

The question of the qualifications of Dr. Butler to interpret the roentgenograms is also one normally addressed to the sound discretion of the trial court. Any person who has by sufficient experience acquired adequate knowledge of roentgenograms and their interpretation may qualify as a witness. It is a general rule that for one to testify as an expert it is not necessary that he be infallible or possess the highest degree of skill. It is sufficient if he possesses peculiar knowledge, wisdom or information regarding the subject matter, acquired by study, investigation, observation, experience or practice, not possessed by the ordinary layman or inexperienced person. It is evident, we think, from the foregoing evidence that Dr. Butler was well qualified to interpret these roentgenograms.

The Supreme Court accordingly held that the physician had been properly qualified as an expert and that the roentgenograms had been accurately taken and interpreted. The judgment of conviction was affirmed. *Wallace v. State, 35 So. (2d) 703 (Miss., 1948).*

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

35:873-1058 (June) 1948

- Effect of Ergot Derivatives on Circulation in Man with Special Reference to Two New Hydrogenated Compounds (Dihydroergotamine and Dihydroergocornine). H. J. Blumschel and R. H. Gutz.—p. 873.
- Terminal Electrocardiographic Patterns in Experimental Anoxia, Coronary Occlusion, and Hemorrhagic Shock. A. S. Harris.—p. 895.
- *Terminal Electrocardiograms: Twenty-Three Case Reports and Review of Literature. M. W. Stroud and H. S. Feil.—p. 910.
- Changing Intensity of First Sound in Auricular Flutter. Aid to Diagnosis by Auscultation. W. P. Harvey and S. A. Levine.—p. 924.
- *Oxygenation Studies in Congenital Pulmonary Stenosis: Application of Recording Oximetry in Evaluation of Cardiorespiratory Function. G. Gullickson, J. O. Elam, Margaret Hammond and others.—p. 940.
- Wolff-Parkinson-White Syndrome with Myocardial Infarction: Experimental Study. Irene G. Tamagna, J. S. Butterworth and C. A. Poindexter.—p. 948.
- Cardiac Vibrational Intensity and Cardiac Output. J. H. Foulger, P. E. Smith Jr. and A. J. Fleming.—p. 953.
- Respiratory Movement as Factor in Production of Q Waves in Lead I and in Unipolar Leads from Left Precordium in Human Left Bundle Branch Block. A. W. Lapin and H. B. Sprague.—p. 962.
- Electrocardiographic Studies of Asynchronism of Ejection from Ventricles: Normal Subjects and Patients with Bundle Branch Block. G. F. Ellinger, F. G. Gillick, B. R. Boone and W. E. Chamberlain.—p. 971.
- Evidence for Generalized Arterial Constriction in Coarctation of Aorta. E. Hull.—p. 980.
- Observations Concerning Influence of Calcium on Actions of Digitalis Glycoside. M. Friedman and R. Bine Jr.—p. 984.
- Nomogram for Rate Correction of Q-T Interval in Electrocardiogram. M. Kassin, M. M. Schwarzschild and H. Bakst.—p. 990.

Terminal Electrocardiogram.—Stroud and Feil present 23 cases in which electrocardiograms were obtained before and during the terminal activity of the heart. The electrodes were attached to the moribund patient before clinical death. The three standard leads were obtained and also a few chest leads. Tracings were taken intermittently or continuously on lead II until the string became motionless. Several electrocardiograms were obtained during operations with patients under general anesthesia. The 23 patients ranged in age from 10 to 87 years. No definite heart disease could be found in 7 cases. In 1 of the latter sudden death was due to ventricular fibrillation, while in 3, ventricular fibrillation was but the terminal phase, occurring long after "clinical" death. The remaining 3 patients of this group showed no ventricular fibrillation. The heart slowed and then stopped abruptly. Of the 16 cases of obvious heart disease, 7 ended with ventricular fibrillation. Of the 8 patients with recent or old myocardial infarction, 4 died suddenly as a result of the abrupt onset of ventricular fibrillation, while the other 4 patients died suddenly with slowing and abrupt standstill. Fifteen of the 16 patients with diseased hearts died rapidly. In only 5 of these was death directly due to the onset of ventricular fibrillation.

Oxygenation Studies in Congenital Pulmonary Stenosis.—Gullickson and his associates say that the Blalock-Taussig operation has been performed in 14 instances of the tetralogy of Fallot at the University of Minnesota Hospitals. Physiologic studies of pulmonary oxygenation were made in 10 of these patients by means of recording oximetry, and of these 2 representative cases are presented. The studies were carried out preoperatively, during the operation and postoperatively. Two important facts were revealed. First, the rise in arterial oxygen saturation on the establishment of the systemic-pulmonary arterial shunt was practically immediate, and, second, the saturation time on administration of 100 per cent oxygen was greatly shortened after the operation. The first observation indicated that the shunt had a direct primary beneficial

effect on arterial oxygen saturation. The second would seem to show that the net effect of the operation was to increase the fraction of the total cardiac output supplying the pulmonary vascular bed. The implication from these observations is that the shunt resulted in a substantial improvement in the functional capacity of aeration of blood.

American Journal of Surgery, New York

75:757-866 (June) 1948. Partial Index

- Posterior Sphincterotomy. E. T. Whitney.—p. 761.
- Clinical Studies of Liver Function: Hepatorenal Syndrome. C. R. Schmidt and V. E. Chesky.—p. 772.
- Double Fractures and Double Non-Unions of Shaft of Tibia. H. May.—p. 796.
- Extraparitoneal Cesarean Section as Procedure of Choice. R. A. Caccia-relli.—p. 802.
- Modern Management of Megacolon. B. M. Bosworth, H. D. Stein and J. R. Lisa.—p. 808.
- Various Anesthetics in Orthopedic Surgery. B. B. Sankey and L. E. Campbell.—p. 817.
- The Critically Buried Child. J. C. Urkov.—p. 821.
- Richter's Hernia. D. Ljall and R. Luomanen.—p. 828.

American Journal of Tropical Medicine, Baltimore

28:349-514 (May) 1948. Partial Index

- Food and Malaria. E. I. Salisbury.—p. 349.
- Shigellae Occurring in Japan. W. L. Barksdale.—p. 359.
- Pneumonic Plague: Report of Recovery in Proved Case and Note on Sulfadiazine Prophylaxis. C. H. Huang, C. Y. Huang, L. W. Chu and T. F. Huang.—p. 361.
- Incidence and Control of Ameliasis and Other Intestinal Protozoan Infections in Memphis Hospital. H. H. Anderson, H. G. Johnstone, H. Packer and others.—p. 373.
- Quinacrine Levels in Plasma of Persons with Infections Jaundice During and After Suppressive Malaria Therapy. J. Maier.—p. 395.
- Absorption of Quinine and Quinacrine in Dysentery Patients. J. Maier.—p. 397.
- Comparison of Effectiveness of Quinacrine and Quinine Against Falciparum Malaria. J. Maier, F. B. Bang and N. G. Hairston.—p. 401.
- Field Trial of Chloroquine (SN 7613) as Suppressive Against Malaria in Philippines. J. Maier.—p. 407.
- Study of Prophylactic, Curative and Suppressive Activity of SN-11,437 (Metachloridine) in Standardized Infections of Vivax Malaria. T. N. Pullman, A. S. Alving, R. Jones Jr. and others.—p. 413.
- Intercurrent Infections of Carrion's Disease Observed in Peru. W. E. Ricketts.—p. 437.
- *Rabies, The Physician's Dilemma. T. F. Sellers.—p. 453.
- Yellow Fever Reservoir of Orinoco-Amazon Basin. J. Boshell-Manrique.—p. 457.
- Studies on Transmission of Filarial Worms of Cotton Rat. J. A. Scott.—p. 481.
- Rearing and Maintaining Laboratory Colony of Body Lice on Rabbits. G. H. Culpepper.—p. 499.

Rabies, the Physician's Dilemma.—After thirty years of practical experience, it is Sellers' belief that antirabic vaccine is not harmless and that it has caused more deaths than has rabies when given to persons only indirectly or remotely exposed. Since 1925, the Georgia Department of Public Health has furnished treatment for more than 50,000 persons, in 7 of whom treatment paralysis developed. Whereas in the material reviewed by the author the incidence of paralytic accidents was 1 in every 7,200 persons treated, other authors have reported an incidence of 1 in 3,000 cases. Of the 7 cases of treatment paralysis encountered in Georgia, 4 terminated fatally. Only 2 occurred in persons treated because they were actually bitten by rabid dogs. Five were in persons only remotely exposed, treated mainly to allay undue apprehension. Of these 5, 3 died. Five were in persons who had previously received antirabic vaccine. A study of 32 post-treatment fatalities due to rabies occurring among 50,000 persons treated in Georgia since 1925 reveals that 19, or 60 per cent, of these deaths occurred in persons bitten severely on the face. In no instance did rabies develop after superficial face wounds. The death rate per thousand treated for face bites was 7.9 per cent. The death rate per thousand treated for hand and arm bites was 0.5 per cent. Only 1 death followed bites on the lower extremities, a rate of 0.1 per thousand treated. Bites on the body also had a death rate of 0.1 per thousand treated. The author cites conditions under which antirabic treatment is advisable or contraindicated. He is convinced that it is not hydrophobia but rather rabiphobia which constitutes the major and most troublesome problem to the practicing physician and health officer. The administration of antirabic vaccine to persons actually bitten or scratched by the teeth of known or suspected rabid animals is a relatively

simple and justifiable procedure regardless of the outcome, in that the danger of the disease is far greater and more serious than any ill effects from the vaccine, but for exposures other than actual bites, the danger of treatment complications far exceeds that of either rabies or rabiphobia.

American Practitioner, Philadelphia

2:635-702 (June) 1948. Partial Index

- Physiologic Therapy of Intractable Bronchial Asthma and Status Asthmaticus. A. L. Barach.—p. 635.
 Anthallan Therapy in Infantile Eczema. M. S. Kleckner Jr.—p. 639.
 Newer Antihistaminic Drugs in Symptomatic Treatment of Allergic Manifestations. S. Friedlaender and A. S. Friedlaender.—p. 643.
 Recent Hazards in Treatment of Appendicitis. E. Holman.—p. 648.
 *Prevention of Turnover in Hospital Personnel: Incentives. M. H. Eichentaub.—p. 655.
 Standard Method for Reporting Blood Sedimentation Tests. L. M. Hershenson and M. A. Hershenson.—p. 661.
 Simple Approach to Study of Vaginal Smears: I. Variations in Normal Sexual Cycle. R. G. Bonine.—p. 664.
 Recognition of Incipient Hyperthyroidism. R. E. Swenson and G. M. Curtis.—p. 671.
 Physiology of Adrenals as Related to Addison's Disease, Virilism and Cushing's Syndrome. J. E. Howard.—p. 674.
 Peritonitis, Simulating Tuberculous Peritonitis, Due to Rupture of Dermoid Cyst of Ovary. S. G. Odle and S. A. Rosenberg.—p. 686.

Prevention of Turnover in Hospital Personnel.—Eichentaub deplors the lack of adequate employment incentives in most hospitals and believes that this is causing excessive turnover. The hospital employee has had no economic security when sickness and old age have deprived him or her of the ability to work. Long hours of work and insufficient vacations are other outstanding causes of rapid turnover of personnel in the hospital. At the outset the employee should be shown a progress chart and told that he will be rated for such performances as quality of work, quantity of work, knowledge of job, dependability, initiative, cooperation, personality, ability to learn, attendance and judgment. At the end of ten days' employment, the personnel director should hold an interview to determine whether the employee likes the work, is becoming adjusted, gets along with the supervisor, is thoroughly familiar with the rules and regulations or feels overworked. This ten day follow-up interview is a crucial period. The next interview should be at the end of thirty days. It is important that every employee be interviewed before leaving the organization. Many leave because of some petty irritation or annoyance that can be "talked out." An important factor is recognition of the employee's work. This is one of the most powerful human incentives.

American Review of Tuberculosis, New York

57:433-546 (May) 1948

- *Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: 407 Consecutive Cases. H. G. Trimble, J. L. Eaton, G. L. Crenshaw and Ina Gourley.—p. 433.
 Extrapleural Pneumothorax. J. R. Head and C. W. Moen.—p. 471.
 Bed-Rest in Thoracic Embolization in Tuberculosis. T. T. Fox, E. H. Robitzek, I. Bernstein and Audrie L. Bobb.—p. 485.
 Treatment with Antitubercular Cytotoxic Serum in Pulmonary Tuberculosis. H. R. Nayer.—p. 489.
 Pleural Fat Pads: Cause of Thoracic Shadows. L. C. Evander.—p. 495.
 Effect of Benadryl Hydrochloride on Tuberculin Reaction in Guinea Pigs. R. W. Sarber.—p. 504.
 Medical Aspects of Rehabilitation. Study on 175 Veterans with Arrested Pulmonary Tuberculosis. I. Pine.—p. 511.
 Role of Family in Control of Tuberculosis. H. Hudson.—p. 519.

Pneumoperitoneum in Pulmonary Tuberculosis.—Trimble and his co-workers treated 407 patients with pulmonary tuberculosis by pneumoperitoneum. Three hundred and eighty-two of these, 160 men and 222 women, more than half of whom were between the ages of 21 and 40 and one fifth of whom were over 51, were analyzed according to results. In 218 patients (57 per cent) the disease became arrested, and an additional 48 (13 per cent) were definitely improved with cavity closed and three day sputum negative to concentration at weekly intervals for two months. The number of complications severe enough so that pneumoperitoneum was discontinued varied from 23 to 28, depending on the point of view. Analysis according to the extent of pulmonary disease showed that arrest occurred in 28 of the 34 patients with minimal pulmonary tuberculosis; in 107 of the 135 with moderately advanced, and in 83 of the 213 with far advanced tuberculosis. In 106 of the 223 patients with cavitation, the disease became arrested, and another 40 were defi-

nately improved. The position of the cavity within the lung, whether apical, in the midlung field or basal, made no statistically significant difference in the results obtained. In the 135 patients with moderately advanced disease, no marked difference was apparent between those with and those without cavitation; in 33 of the 45 with cavitation the disease became arrested, and in 74 of the 90 without cavitation; in the 213 cases of far advanced disease a decided difference was shown in favor of those with cavitation; in 73 of the 178 with cavitation the disease became arrested, in comparison with 10 of the 35 without cavitation. Results of pneumoperitoneum therapy in pulmonary tuberculosis complicated by pleurisy with effusion were gratifying, but were in general unsatisfactory in silicotuberculosis and not good in pulmonary tuberculosis complicated by tuberculous tracheobronchitis when compared with cases with cavity.

Archives of Physical Medicine, Chicago

29:327-380 (June) 1948

- Neurophysical Aspects of Therapy in Cerebral Palsy. T. Fay.—p. 327.
 Hypothesis to Explain Muscular After Effects of Poliomyelitis. M. E. Knapp.—p. 334.
 Corrective Physical Rehabilitation for Neuropsychiatric Patients. J. E. Davis.—p. 345.
 *Use of Tetanizing Current in Myasthenia Gravis: Report of Case. J. L. Rudd and J. F. Cullinan.—p. 354.
 Evaluation of Hemorrhadiation Therapy. F. B. Moor, R. E. Hoyt and M. G. Levine.—p. 358.

Tetanizing Current in Myasthenia Gravis.—Rudd and Cullinan believe that involved muscles in a patient with myasthenia gravis could be kept in normal tone if exercised judiciously. They report the case of a man, aged 53, who had ptosis of the right eyelid and who was supporting his mandible because of weakness of the masseter muscle. An attempt was made to increase the strength of the muscles and prevent progressive atrophy of disuse. The masseters were selected for treatment with a tetanizing current. Test results were used as a guide to determine the number of contractions to be eliminated during treatment. Improvement was noted within a week. In the fatigue tests, a greater number of contractions were produced without reaching the absolute fatigue point. After the patient had received the second treatment, ten contractions were elicited from the left masseter. Five days later in a fatigue test the number was 120. The number of contractions produced at treatment sessions between the aforementioned dates was seven. Two weeks later a fatigue test showed that the originally weaker right masseter had caught up with the left one, with 200 contractions elicited. After this test, sixty treatment contractions were given to each masseter. The patient lost the numbness on the right side of the face which had been present since the onset of the disease. A drooping from the side of the mouth, a source of considerable annoyance to the patient, had ceased. On palpitation the masseters appeared to be of normal tone. The patient stated "My face seems to be alive again." The final fatigue test was carried out on the forty-seventh day. Four hundred contractions were elicited from each masseter, an increase of approximately 400 per cent in forty-seven days. It was felt that the objective of increasing the strength of the masseter muscles had been reached.

Bulletin New York Academy of Medicine, New York

24:341-408 (June) 1948. Partial Index

- Testicular Dysfunction. E. P. McCullagh.—p. 341.
 Effect of Immobilization on Metabolic and Physiological Functions of Normal Men. J. E. Deitrick.—p. 364.
 Clinical Significance of Nutritional Deficiencies in Pregnancy. W. T. Tompkins.—p. 376.
 Changed Status of Diphtheria Immunity. P. Cohen, H. Schneek, E. Dubow and S. Q. Cohan.—p. 389.
 Changes in Lysozyme Formation in Human Colon in Various Emotional States. W. J. Grace, P. H. Seaton, S. Wolf and H. G. Wolff.—p. 390.
 *Use of Para-Aminobenzoic Acid in Amebiasis: Preliminary Report. K. G. Dwork.—p. 391.
 Differential Diagnosis of Diaphragmatic Hernia and Coronary Heart Disease. S. Daek, J. Stone, A. Grishman and A. M. Master.—p. 396.
 *Aspiration of Bone Marrow from Iliac Crest: Technical and Diagnostic Advantages versus Sternal Aspiration. M. A. Rubinstein.—p. 400.

Para-Aminobenzoic Acid in Amebiasis.—Dwork treated 12 patients with amebiasis with sodium salt of para-aminobenzoic acid, purely on an empiric basis. It was possible to evaluate the results of treatment in 9 of the 12 cases. Evidence of clinical

and laboratory arrest of the disease followed administration of sodium para-aminobenzoic acid in 4 of the 9 cases. Of the 7 patients with symptoms, all but 1 showed disappearance of or improvement in symptoms following treatment.

Aspiration of Bone Marrow from Iliac Crest.—Rubinstein shows that the aspiration of bone marrow from the iliac crest has the advantage that no serious injury can be sustained by any underlying organ. The procedure is less painful, and the patient is less apprehensive than when subjected to a puncture in the cardiac area. Puncture of the iliac crest can easily be performed at frequent intervals at both sides of the body, and is therefore suitable for serial bone marrow studies. Bone marrow cavities of the iliac crest can occasionally be used as a route of administering fluids into the general circulation. The cells of the iliac bone marrow have been studied for the past four and a half years in about 1,000 different cases showing normal and pathologic findings. In about 300 of these instances, simultaneous sternal marrow studies were also performed. In certain instances the iliac aspiration has proved of distinct diagnostic advantage, as compared with the sternal aspiration alone.

Bull. of U. S. Army Med. Dept., Washington, D. C.
8:411-492 (June) 1948

- What Every Medical Officer Should Know About the Atomic Bomb. Office of The Surgeon General.—p. 422.
Psychosurgery. W. Freeman and J. W. Watts.—p. 434.
Acute Appendicitis. R. N. Schullinger.—p. 436.
Determinations of pH of Pacific Oysters. W. J. Carr, R. B. Anderson and C. W. Deitzold.—p. 442.
Treatment of Surgical Infections with Antibiotics. F. Meleney.—p. 445.
Fractures and Dislocations of Spine. J. C. McCauley Jr.—p. 451.
Infectious Arthritides. J. J. Bunim.—p. 458.
Diabetes Mellitus. M. Handelsman.—p. 463.
Management of Venereal Disease Cases in First Army Area. G. J. Carroll.—p. 469.
Estimation of Streptomycin Sensitivity of Bacteria. A. Ehrlich.—p. 473.
Estimation of Streptomycin in Blood Serum. A. Ehrlich.—p. 476.
Infarction of Auricle. I. Graef.—p. 481.
Surgical Management of Regional Ileocolitis. F. Glenn.—p. 485.
Modern Concept of Pulmonary Tuberculosis. G. G. Ornstein.—p. 489.

Georgia Medical Association Journal, Atlanta
37:167-202 (May) 1948

- Current Problems of Organized Medicine. S. P. Kenyon.—p. 167.
Bismuth Therapy for Colds. T. Levy.—p. 172.
Early Ambulation and Related Aspects of Postoperative Surgical Management. C. S. Pittman Jr.—p. 174.
Xanthomatous Tumors of Achilles Tendon. H. B. Jenkins.—p. 176.
Amebic Abscess of Liver. J. D. Martin Jr.—p. 178.
Chronic Lymphatic Leukemia Occurring Simultaneously in Brothers. H. C. Frech.—p. 183.
Physician and Public Relations. G. Middlebrooks.—p. 184.

Journal of Clin. Endocrinology, Springfield, Ill.
8:345-422 (May) 1948

- Classification of Male Hypogonadism and Discussion of Pathologic Physiology, Diagnosis and Treatment. C. T. Heller and W. O. Nelson.—p. 345.
Male Pseudohermaphroditism Proved by Surgical Exploration and Microscopic Examination: Case Report with Speculations Concerning Pathogenesis. M. B. Goldberg and A. F. Maxwell.—p. 367.
Relation Between Infant Birthweight and Subsequent Development of Maternal Diabetes Mellitus. J. P. Kriss and P. H. Fletcher.—p. 380.
Extreme Leydig Cell Hyperplasia Associated with 2 Other Endocrine Changes: Case Report. E. L. Wilbur and R. A. Burger.—p. 390.
Necropsy Study of Case of Turner's Syndrome. A. Atria, R. Sanz and S. Donoso.—p. 397.
Induction of Uterine Bleeding in Amenorrhea with Single Injection of Precipitates of Estrone and Progesterone. B. Zondek and S. Rozin.—p. 406.

Infant Birthweight and Subsequent Development of Diabetes Mellitus.—Diabetic women frequently give birth to unusually large infants. Infants of excessive weight may be born to mothers before clinically apparent maternal diabetes mellitus develops. Kriss and Fletcher attempted to ascertain how the birthweight of an unusually large baby can be correlated with the likelihood of subsequent development of maternal diabetes. They analyzed the birthweight data on infants born to 100 women in whom diabetes mellitus later developed and on infants born to two control groups. They found that the birth of an infant weighing over 10 pounds (4,536 Gm.) may herald the development of diabetes in the mother. The average

birthweight of infants born to prediabetic mothers is greater than that of infants born to normal mothers. The period between the birth of the first abnormally large infant and the development of clinical diabetes in the mother averaged about twenty-four years, with a range of one to forty-six years. The authors have constructed a table permitting rough estimation of the accuracy with which one may predict the subsequent development of diabetes in a woman giving birth to a baby weighing in excess of ten pounds. The table shows that as the birthweight of the baby rises, the prediction accuracy increases progressively and is greater than 60 per cent when the baby weighs more than 13 pounds.

Journal of Experimental Medicine, New York
87:369-456 (May) 1948

- Antibody Response in Rabbits to Killed Suspensions of Pathogenic *T. Pallidum*. H. Eagle and R. Fleischman.—p. 369.
Inhibitory Effect of Polysaccharide on Mumps Virus Multiplication. H. S. Ginsberg, W. F. Goebel and F. L. Horsfall Jr.—p. 385.
Effect of Polysaccharides on Reaction Between Erythrocytes and Viruses, with Particular Reference to Mumps Virus. H. S. Ginsberg, W. F. Goebel and F. L. Horsfall Jr.—p. 411.
Osmotic System Within the Cytoplasm of Cells. E. L. Opie.—p. 425.
Inactivation of Biologically Active Proteins, and Virus of Western Equine Encephalomyelitis by Periodic Acid. W. F. Goebel, P. K. Ohtsky and A. C. Saenz.—p. 445.

87:457-606 (June) 1948. Partial Index

- Protein Metabolism and Exchange as Influenced by Constriction of Vena Cava. Experimental Ascites an Internal Plasmapheresis: Sodium Chloride and Protein Intake Predominant Factors. F. W. McKee, P. R. Schloerb, J. A. Schilling and others.—p. 457.
Determination of Concentration of Dye T-1824 in Normal and Lipemic Plasmas. F. P. Chinard and H. A. Eder.—p. 473.
Effect of Nitrogen Mustards on Enzymes and Tissue Metabolism. E. S. G. Barron, G. R. Bartlett and Zelma Baker Miller.—p. 489.
Variation Occurring in Group A Streptococci During Human Infection. Progressive Loss of M Substance Correlated with Increasing Susceptibility to Bacteriostasis. S. Rothbard and R. T. Watson.—p. 521.
Reversibility of O-D Type of Influenza Virus Variation. T. P. Magill and J. Y. Sugg.—p. 535.
Parenteral Plasma Protein Maintains Nitrogen Equilibrium Over Long Periods. R. Terry, W. E. Sandrock, R. E. Nye Jr. and G. H. Whipple.—p. 547.

Journal of Infectious Diseases, Chicago
82:197-308 (May-June) 1948

- Use of Mice in Experimental Chemotherapy of Tuberculosis. G. W. Raleigh and G. P. Youmans.—p. 197.
Effect of Arsenicals and Antimonials on Activity of Glycolytic Enzymes in Lysed Preparation of *Trypanosoma Equiperdum*. G. Chen.—p. 226.
Studies on Immunity to Asiatic Cholera: V. Absorption of Immune Globulin from Bowel and Its Excretion in Urine and Feces of Experimental Animals and Human Volunteers. W. Burrows and I. Havens.—p. 231.
Effect of Artificial Blood Meals Containing Hydroxynaphthoquinone M2279 on Developmental Cycle of *Plasmodium Gallinaceum* in *Aedes Aegypti*. L. Whitman.—p. 251.
Studies on *Leptospira Icterohaemorrhagiae*: IV. Survival in Water and Sewage: Destruction in Water by Halogen Compounds, Synthetic Detergents, and Heat. S. L. Chang, M. Buckingham and M. P. Taylor.—p. 256.
Components of Tubercle Bacillus Responsible for Delayed Type of "Infectious" Allergy. S. Raffel.—p. 267.
*Laboratory Study of Epidemiology of Poliomyelitis. F. B. Gordon, F. M. Schabel Jr., A. E. Casey and W. I. Fishbein.—p. 294.
Respiratory Pathogenicity of *Brucella*. S. S. Elberg and S. W. Henderson.—p. 302.

Epidemiology of Poliomyelitis.—Gordon and his associates say that in 1945 an epidemiologic study of poliomyelitis was organized in Chicago under the auspices of the Chicago Health Department. The method was to make a survey of the neighborhoods of verified cases of paralysis during which a certain number of contacts and noncontacts were selected for intensive study. Some results had been reported previously. Pools of daily stool collections from 76 persons were tested by inoculation of 2 monkeys each. Of 23 household contacts, 17 were infected as evidenced by virus in the stool. The incidence of infection in extra-household contacts was 9 of 23, and in noncontacts living in the same neighborhood, 2 of 18. None of 5 persons from nonpoliomyelitis (control) neighborhoods and 1 of 7 unclassified persons were infected. These results are interpreted as indicating that during this epidemic period contact with an infected person was the usual source of infection within the groups studied rather than any general widespread factor in the neighborhood.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London 60:159-194 (May) 1948

*Treatment of Lupus Vulgaris with Large Doses of Calciferol: Clinical and Biochemical Appraisal: Part I.—Clinical. J. T. Ingram and S. T. Anning.—p. 159.

Calciferol for Lupus and Other Conditions. D. E. Macrae.—p. 168.

Calciferol in Treatment of Tuberculosis. Suzette Gauvain.—p. 174.

Histologic Changes in Lupus During Calciferol Treatment. W. Freudenthal.—p. 178.

Three Cases of Hodgkin's Disease with Predominantly Cutaneous Localization. L. Van der Meiren.—p. 181.

Calciferol in Lupus Vulgaris.—Ingram and Anning believe that more than 70 per cent of patients with lupus can be cured clinically in twelve to eighteen months by daily ultraviolet light baths to the whole body, combined with improved living conditions, particularly dietetic and environmental improvements. Calciferol has a striking effect on certain cases of lupus. The authors review observations on the effects of treatment with calciferol in 158 cases of lupus and 28 other cases. Four of the 158 patients with lupus have been cured and 23 have been improved, whereas in the other 131 cases the results have been negligible. Toxic effects have been observed in 30 patients, and in an additional 25 per cent gross disturbances developed in the calcium metabolism. A high percentage of those with diffusible calcium also show impaired renal function. The permanency of this damage is not known at present. In 1 child the renal function was only 40 per cent of normal thirty-four weeks after cessation of treatment with calciferol. In general, the experience of these authors with calciferol has not been very favorable. They do not believe that it will replace treatment with light in lupus and that its definite evaluation will require considerably more time. In sarcoidosis the results obtained with calciferol have been rather good, and good effects have been obtained also in erythema induratum and in scrofuloderma, but in tertiary syphilis the results were not good. The incidence of chilblains was not reduced during calciferol therapy.

British Medical Journal, London

1:917-964 (May 15) 1948

Etiology, Diagnosis, Treatment of Early Vitamin-Deficiency States. Z. A. Leitner.—p. 917.

*Treatment of Neurosyphilis with Penicillin. J. P. Martin.—p. 922.

Case of Acute Porphyria. E. Petric.—p. 926.

Case of Acute Mononitrobenzene Poisoning. J. D. N. Nabarro.—p. 929.

Heterotopic Ossification of Appendicular Mucocoele. I. Juvara and U. Borcescu.—p. 931.

Penicillin in Neurosyphilis.—Martin reviews observations on 24 patients with neurosyphilis who were treated with penicillin. This number included 8 patients with dementia paralytica, 5 with tabes, 2 with optic atrophy and 9 with meningovascular syphilis. Penicillin was given by the intramuscular route only. Sodium penicillin was used for most of the cases, and in recent times the crystalline form whenever obtainable. In the early days the total amount given in each course was 2,000,000 Oxford units. This was soon increased to 3,000,000 and then 4,000,000; for the last two years the course has been standardized at 5,000,000 units. Although he realizes that longer observation is necessary, the author concludes that penicillin alone is sufficient in most cases of neurosyphilis. Whether it is adequate for the most acute cases of general paralysis of the insane the experience of this series does not show. If, with the possible exception of such cases, the patient can be kept under observation after treatment and penicillin repeated if necessary, malaria will seldom be called for, and, if malaria is used at all, risks which were necessary before need not now be taken.

Journal of Royal Army Medical Corps, London

90:93-132 (March) 1948. Partial Index

Early Days of Army Psychiatry. R. Rosie.—p. 93.

*Pathology of Liver in Deaths from Thermal Burns. A. P. Prior.—p. 101.

Diphtheria in Army in United Kingdom: Study of Its Complications. R. G. Paley and S. C. Truelove.—p. 109.

Pathology of Liver in Deaths from Thermal Burns.—Prior gives an account of the lesions seen in the livers of 35 men who died as the result of thermal burns. The nature of the cellular changes could be coupled with the topical therapy.

Those treated with tannic acid showed central lobular necrosis. Intracellular and intracytoplasmic inclusions were not found. Those treated with sulfonamide drugs showed fatty degeneration. No specific changes were found in those who received only bland treatment in the form of applications and baths of isotonic sodium chloride solution.

Journal of Tropical Medicine and Hygiene, London 51:89-110 (May) 1948

Diagnosis of Rectal Schistosomiasis. C. V. Meeser, W. F. Ross and D. M. Blair.—p. 91.

Cholera in Egypt: Laboratory Diagnosis and Protective Inoculation. M. A. Gohar and M. Makkawi.—p. 95.

Studies in Tropical Ulcer: Part III.—The Insect Vector. K. Hare.—p. 99.

Lancet, London

1:737-776 (May 15) 1948

Psychiatry as Applied to Occupational Health. D. Stewart.—p. 737.

Is Rheumatism Virus Disease? M. Gordon.—p. 740.

*Rubella in Pregnancy as Etiologic Factor in Stillbirth. C. Swan.—p. 744.

*Maternal Measles, Mumps, and Chickenpox as Cause of Congenital Anomalies. M. J. Fox, E. R. Krumble and J. L. Teresi.—p. 746.

Avulsion Fracture of Lesser Tuberosity of Humerus: Report of Case. A. T. Andreassen.—p. 750.

Exophthalmic Ophthalmoplegia Treated with Prostigmin. C. F. Critchley and A. J. Cameron.—p. 751.

Rubella in Pregnancy and Stillbirths.—Swan says that the role played by rubella in the production of congenital malformations is now well known. Rubella appeared also to be associated with a high incidence of stillbirths. In 1946 the author made a survey of the cause of about a third of the stillbirths recorded in South Australia in the seven years 1939 to 1945, with special attention to the incidence of infectious diseases during pregnancy. There were 2,156 stillbirths registered from 1939 to 1945; questionnaires were sent to 1,265 of the mothers, and 760 replies were received. There were 16 instances (1 doubtful) of maternal rubella during pregnancy, and in 13 of these the infection took place during the first four months of pregnancy. Though various other infections had been contracted by these mothers in pregnancy, rubella was the only one which showed this particularly high incidence in the early months. It is suggested that rubella may be a factor in the causation of stillbirths by damaging the embryo early in pregnancy.

Maternal Measles, Mumps and Chickenpox as Cause of Congenital Anomalies.—Fox and his associates say that the reporting of congenital anomalies in babies born of pregnancies in which the mothers had had rubella has naturally raised the question whether other infectious diseases, particularly those due to a virus, may cause similar defects. All notifications of measles, mumps and chickenpox to the Milwaukee Health Department from 1942 to 1945 were examined, and as many as possible of the married women who had had these diseases were interviewed to determine the incidence of congenital anomalies among their offspring. The incidence of anomalies in this group of 665 children was 0.9 per cent. Of 33 live children born to the same number of married women who had measles, mumps or chickenpox while pregnant, 1 had a congenital anomaly. One pregnancy ended in spontaneous abortion in the second month. None of 22 children born of pregnancies complicated by mumps and none of 4 children born of pregnancies complicated by chickenpox showed congenital defects, but 1 of 7 children born of pregnancies complicated by measles had a unilateral harelip. The reports of other workers on anomalies following maternal rubella in pregnancy indicate an over-all incidence about fifteen times the expected rate of 0.9 per cent, and in the case of mothers who had had rubella in the first four months of gestation more than eighteen times the expected rate. The authors are aware that this series is too small for definite conclusions to be drawn.

Tubercle, London

29:97-120 (May) 1948

Modern Methods of Culturing Mycobacterium Tuberculosis, with Special Reference to Dubos Technique. A. Roberts.—p. 97.

Bilateral Active Pulmonary Tuberculosis Treated with Artificial Pneumothorax and Thoracoplasty: Review of 29 Cases. G. P. Maher-Loughnan.—p. 101.

Autopsy Findings in Boeck's Sarcoid. H. J. Ustvedt.—p. 107.

Klinische Wochenschrift, Heidelberg

26:129-160 (March 1) 1948. Partial Index

Iso-Immunization as Cause of Fetal Erythroblastosis (4 Cases Produced by Rh Factor). P. Peau.—p. 132.

Modification of Action of Acetylcholine by Ferment Decomposition of Histamine by an Antihistamine and by Vitamin B₁. G. Stuttgart.—p. 136.

Allergy and Gastric Diseases. B. Fang.—p. 141.

Vestibular Reaction Elicited Acoustically. J. Tomndorf.—p. 149.

Allergy in Patients with Stomach Disorders.—Fang points out that at the medical clinic of the University of Heidelberg 729 patients with gastric disturbances who had either an ulcer or severe gastritis were subjected to cutaneous tests with various types of foods. Over 60 per cent of the patients, or 441, gave positive allergic reaction to one or several foods. The substances producing cutaneous allergic reactions were, in order of decreasing frequency, meat, milk, egg yolk, barley, oats, vegetables, egg white, rye, fish and wheat. Only 29, or 17 per cent, of 170 patients without gastric disturbances gave positive reaction to the food substances. The author believes that the considerable difference in incidence of allergic reactions between the groups with and without gastric disturbances indicates a positive correlation between gastric and allergic disturbances. The relative rarity of polyvalent allergy indicates that allergy is less often a sequel than a causal factor in gastric disturbances. Allergic reaction of the gastric mucosa to the substance that had elicited positive reaction in cutaneous test was indicated by subjective symptoms in 12 of 15 cases. Other authors who studied the gastric secretion in order to ascertain an allergic reaction of the gastric mucosa did not succeed in demonstrating allergy in this way. In 8 patients with ulcers and in 7 with gastritis, the authors were able to employ desensitization to the offending substance. For two weeks the substance was eliminated from the diet, and this together with a rest cure usually improved the subjective symptoms. Then desensitization was instituted by giving twice weekly a subcutaneous injection of 0.1 cc. of a concentration of the specific allergen. The first concentration was often as low as 1:106, but in the course of five to eight injections the concentration was increased to 1:10. Then followed oral desensitization, beginning with one-half teaspoonful of the allergen (1:200) in a cup of broth, milk or gruel. The oral dose was slightly increased every day. After six weeks, 12 or 17 patients were completely free from symptoms and the others showed great improvement. The desensitization exerts no influence on psychic or other factors that may play a part in the development of the gastric disturbances.

Nordisk Medicin, Stockholm

38:819-870 (April 23) 1948. Partial Index

*Medical Interview and Personal Relation Between Physician and Patient. J. C. Whitehorn.—p. 819.

*Thymol Reaction in Acute Infectious Diseases. K. Iversen and F. Raaschou.—p. 824.

Transvesical Prostatectomy in One Stage. K. Liavaag.—p. 828.

Prostatic Hypertrophy and Cancer of Prostate (1910-1938). A. Hvorslef.—p. 832.

Treatment of Tendinous Panarititis with One Incision, Immobilization and Penicillin Intramuscularly. I. Andersen.—p. 839.

Medical Interview and Personal Relation Between Physician and Patient.—Whitehorn stresses the importance of the physician's understanding and handling of the emotional relation between patient and physician. Through emotional reactions or psychoneuroses man himself is a biologic cause of disease. Skill and poise in interviewing enable the physician to gain an insight into the patient's personal problems and evaluate them as the cause of medical complaints or complicating factors in organic disease. In the interview, conducted not only for the purpose of acquiring information about present and earlier symptoms but also for the revelation of current attitudes, discussion of occupation and home life, is often revealing. Acquaintance with the different stages of emotional development provides the key to the understanding of personal reactions otherwise difficult to interpret and affords guidance in therapeutic strategy. The emotional relationship with the physician in which the patient may become involved, the transference

relationship, can be modified by control of the frequency, duration and intimacy of the interviews and by the patient's intercourse with other persons.

Thymol Reaction in Acute Infectious Diseases.—Iversen and Raaschou say that the thymol test, applied in 393 patients with various acute infectious diseases and in 88 normal persons, gave positive results in measles, infectious mononucleosis and hepatitis. They conclude that the thymol reaction can hardly be considered as a hepatic function test but is rather to be regarded as an expression of changes in the serum proteins due to different virus infections. Whether the changes are qualitative or quantitative is not known.

Revista Españ. de Pediatría, Zaragoza

4:1-150 (Jan.-Feb.) 1948. Partial Index

*Value of Mester's Reaction and Its Modification in Diagnosis of Rheumatic Disease. J. Puig Serrate and A. Barber Orfía.—p. 32.

*Treatment of Infantile Paralysis in Acute Period. V. Sanchis Olmos.—p. 133.

Mester's Test in Diagnosis of Rheumatic Fever.—Serrate and Barber Orfía modified Mester's test by using a 1:1,000 aqueous solution of sodium salicylate. By this modification the pain of the intradermal injection is diminished and the results of the test are as specific as those of Meyer's original test. The test is of great diagnostic value and is specific. Blood for the test is to be taken three times in both the original and the modified test, that is, before the test and again thirty and sixty minutes after it. The number of leukocytes drops after thirty and sixty minutes. The authors obtained positive results in 14 of 17 children with clinical symptoms of rheumatic disease. The test is specific even in cases in which rheumatic disease coexists with either tuberculosis or syphilis.

Treatment of Infantile Paralysis.—The number of cases of poliomyelitis seen in Spain by the author since 1941 is about 1,000. The author found that muscular spasm is independent of paralysis. It is present in all cases of poliomyelitis. Acute muscular spasm is of better prognosis for functional muscular recovery than subacute spasm. Muscular blockage or pseudoparalysis, alone in antagonistic muscles and in combination with spasm in certain antagonistic muscles, muscular incoordination in either spastic or pseudoparalytic muscles and disturbances of the peripheral structures are frequent. Kenny's treatment is of value. The technic for early and late application of warm compresses, physical therapy, manual correction of muscular deformities and muscular reeducation is described in detail. The treatment, which should be given only by physicians trained in the proper technic, prevents talipes equinus, flexion-abduction of muscles, obliquity of pelvis, scoliosis and certain aponeurotic retractions. Sequels due to destruction of motor neurons are incurable.

Wiener medizinische Wochenschrift, Vienna

98:181-200 (May 1) 1948. Partial Index

Causes and Mode of Origin of Variations of Constitution in Man. L. Borchardt.—p. 181.

Hemostyptic Effect of Artificial Cutaneous Emphysema in Hemorrhage of Lung. F. Höglinger.—p. 183.

*Congenital Formation of Cavities of Cerebrum with Contribution to Encephalography of Porencephalous Defects in Children. H. Stech.—p. 184.

Congenital Porencephaly in Children.—Stech reports a rare case of genuine porencephaly in a girl aged 4½ years. The condition was demonstrated roentgenologically in vivo and established on necropsy. After a presumably normal birth the child was given hospital treatment for debility for three months. She never learned to speak. Because of emaciation and mental deterioration the child was readmitted to the hospital. She was apathetic and subject to convulsions. Encephalography revealed a porencephalous defect in the region of the left frontotemporal-parietal lobe triangle, communicating with the lateral ventricle and with the subarachnoid space on the same side. The defect was of Guttman's porus communicans type. Five days after the encephalography the child became lethargic, and death occurred after repeated convulsions. It is suggested that the porencephaly could have been caused by trauma to the brain during delivery. Encephalography appears to be adequate in demonstrating the lesion in doubtful cerebral disturbances.

Book Notices

Vitamins and Hormones: Advances in Research and Applications. Vol. V. Edited by Robert S. Harris, Professor of Biochemistry of Nutrition, Massachusetts Institute of Technology, Cambridge, Mass., and Kenneth V. Thimann, Professor of Plant Physiology, Harvard University, Cambridge, Mass. Cloth. Price, \$7.50. Pp. 478, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1947.

This volume is the fifth in an annual series which is serving the biochemist, physiologist and thoughtful physician by keeping him abreast of recent progress in two fields in which research is advancing with great rapidity. The discussions are detailed and have an international character, since several of the reviews have been prepared by European contributors. Although most of the principal advances in the vitamin field are adequately discussed, two reports deserve particular attention. The discussion of the physiologic availability of the vitamins by Melnick and Oser has many clinical implications and deserves attention by all concerned with problems in nutrition. The review on the physiologic effects of the pteroylglutamates in man summarizes in detail our knowledge of the actions and uses of folic acid.

The section dealing with hormones presents discussions only on selected topics. Of particular interest are the reviews on the use of androgens in women and the clinical uses of testosterone in the male. Heller and Maddock in this latter review point out that the "male climacteric" is rather infrequent and has been confused with a psychosomatic syndrome in neurotic old men. A diagnosis of the "male climacteric" should not be made without demonstration of elevated urinary gonadotropins. Testosterone therapy is of real benefit only in true androgen deficiency.

Other sections relating to hormones discuss the growth and adrenocorticotrophic hormones, the effects of exogenous estrogens on the male mammal and the biology of antithyroid agents. The reviews are all well written. The entire volume reflects care on the part of the editors. Tables, charts and illustrations are used effectively.

The Natural History of Disease. By John A. Ryle, M.A., M.D., F.R.C.P., Professor of Social Medicine in the University of Oxford. Oxford, England. Oxford Medical Publications. Second edition. Cloth. Price, \$7.50. Pp. 481, with illustrations. Oxford University Press, 114 Fifth Ave., New York 11; Amen House, Warwick Sq., London, E. C. 4, 1948.

American readers will benefit both from the style and the content of this book. In addition to a few essays on medical education in the broadest sense, there are nearly thirty chapters in which the natural history of angina, gastrointestinal syndromes, pyogenic infections and other common clinical disorders is illustrated by pithy case histories. Three new essays have been added since the first edition was published in 1936. Those on pyogenic infections have not been revised to deal with the modification of the natural history by antibiotics.

These stimulating discussions, while written by an internist and consultant, emphasize precisely those aspects of disease which are most important for the family practitioner and the young physician. Some of the therapy and clinical physiology will be strange to American readers, but the fine points of bedside and office diagnosis, the discussions of the role played by environment and personality in causing or coloring disease and the clear concise paragraphs make this a useful addition to the physician's library.

Handbook for Physicians. Loose-Leaf. Paper. Pp. 168. Commonwealth of Massachusetts, Department of Public Health, State House, Boston 33, 1947.

This is a looseleaf continuous ring binder book in paper covers which has been published annually for several years by the Health Department of the Commonwealth of Massachusetts. It contains 160 pages of information which will help doctors taking fullest advantages of the services of the Massachusetts State Department of Health, including clinics, laboratory services, hospital relationships, information about laws and regulations and numerous details of information which will help to smooth the relationship between the public health and the private practice aspects of medical service to the people of Massachusetts. Although not so classified, it constitutes an outstanding piece of practical public relations work on the part of the department.

Neurology of the Ocular Muscles. By David G. Cogan, M.D., Associate Professor of Ophthalmology, Harvard Medical School, Boston. Cloth. Price, \$6. Pp. 214, with 69 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1948.

The author has made an attempt to correlate the clinical manifestations of disturbances of the ocular motor system with its neuroanatomic and neurophysiologic structure by presenting the state of the present knowledge of the clinical physiology of the ocular motor system and making clear the conclusions that can safely be drawn from the facts available. The data in this text are arranged according to objective signs rather than disease entities, as neuro-ophthalmology is concerned primarily with localization of disease and only secondarily with the nature of the underlying process. The first section of the book concerns the anatomy and physiology of the ocular muscles. The next section is on the anatomy of the nerves running to the extraocular muscles. A third section pertains to the supranuclear connections of the ocular motor system. The last two sections are concerned with the pupil and nystagmus. The chapter on nystagmus is probably the most comprehensive article on this subject in the English language. The book is profusely illustrated and contains a comprehensive bibliography of 825 references in many languages. The contents will be found of great interest to both practicing ophthalmologists and neurologists.

The 1947 Year Book of Neurology, Psychiatry and Neurosurgery. Neurology. Edited by Hans H. Reese, M.D., Professor of Neurology and Psychiatry, University of Wisconsin Medical School, Madison, Wisconsin, and Mabel G. Masten, M.D., Associate Professor of Neuropsychiatry, University of Wisconsin Medical School. Psychiatry. Edited by Nolan D. C. Lewis, M.D., Director, New York State Psychiatric Institute and Hospital, New York. Neurosurgery. Edited by Percival Bailey, M.D., Professor of Neurology and Neurological Surgery, University of Illinois. Chicago. Fabrikoid. Price, \$3.75. Pp. 702, with 115 illustrations. The Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1948.

This handbook is the forty-eighth annual publication made by the Year Book Publishers. The authors are excellent clinicians, and because of this the material outlined is extremely practical and valuable. The neurologic part of this book contains 245 pages of review of most all the publications in 1947 which the authors considered important. It includes articles on anatomy, physiology and pathology, convulsive disorders and diseases of the central, peripheral and autonomic nervous systems as well as the vascular and muscular structures. Special diagnostic and therapeutic measures are discussed. The psychiatric aspect consists of 174 pages of practical psychiatry and psychoneuroses. The neurosurgical part is a relatively new addition to this handbook. It contains 221 pages of reviews of various neurosurgical papers published in 1947. This is an excellent book of reviews.

The Maryland Medical Care Program: A Report by the Staff of the Subcommittee on Medical Care, Committee on Administrative Practice, American Public Health Association. By Howard M. Kline, Ph.D., Milton Terris, M.D., Cozette Rapney and Nathan A. Kramer. Paper. Pp. 151, with illustrations. American Public Health Association, 1790 Broadway, New York, 1948.

This study is one of a series being prepared by the staff of the Subcommittee on Medical Care of the American Public Health Association. It describes critically the procedures and arrangements by which medical services are provided to the indigent and medically indigent in the state of Maryland.

Maryland has a unique system for caring for the medical needs of indigent and medically indigent persons. Instead of the usual three way division (state-city-county), the administration of a statewide program has been placed in the hands of the state department of health, with actual operation under a "bureau of medical services." This bureau is empowered to contract with physicians, dentists and hospitals for their services. To carry out this program, the Medical Care Act of 1945 provided for an advisory state council on medical care to include fourteen members representing the several professions and the official organizations directly affected by the program.

From the beginning, every effort was made to enlist the cooperation of the medical profession. A general policy of decentralization has been carried on to the extent that each county makes most of its own important decisions. Such decisions are generally made through a county committee on

medical care which includes representatives of the medical and dental societies, as well as officials of the county agencies. Patients are entitled to home, office and hospital calls and have free choice of physicians. Payments to physicians are made on a fee for service basis in accord with a fee schedule arrived at in consultation with the medical profession.

When a physician finds a patient unable to pay for services, the two together make out an application which the patient sends to the county health department. If the patient is indigent or medically indigent, certification is made by the health officer who issues an identification card to the patient. This card is presented to the physician at each call, and the physician bills the health department at the end of the month.

This report of the subcommittee provides an interesting insight into the problems which arose during the development of the Maryland medical care program. It outlines the program as it is now functioning and, in addition, provides a valuable, detailed analysis of the experience during the period from July 1945 to September 1946. The experience of the program as shown by the report seems to indicate that the means test can be applied successfully and that special provision can be made for care of the medically indigent as well as the indigent.

The only criticism voiced by the representatives of the American Public Health Association making the study is that "too many issues are resolved by requesting the faculty (medical and surgical faculty of Maryland) for advice or by urging that the county medical societies be canvassed for their recommendations." They go on to state, "To the medical members of the [advisory] Council the terms 'county advisory committee' and 'county medical society' are practically synonymous." It may well be that these are not criticisms but rather the basic reasons for the singular success of the Maryland medical care program. This study should be "must" reading for every state medical society officer interested in setting up a medical care program for the indigent and medically indigent.

Health Center Buildings. By Harry E. Handley, M.D., Assistant Director, Division of Public Health, The Commonwealth Fund. Paper. Price, 50 cents. Pp. 48, with illustrations. The Commonwealth Fund, 41 E. 57th St., New York 22, 1948.

Since 1930 the Commonwealth Fund has been concerned with the construction of eight health center buildings to house local health departments and their activities. This pamphlet presents experiences in seven of these health centers—four in Tennessee and three in Mississippi—with regard to location, space requirements, architectural design and use of the building. Nineteen pages are devoted to pictures of the health centers, together with their floor plans. Under this program it was agreed that the activities initiated during the "demonstration period" with financial assistance from the Fund would be continued with state and local tax money. A modified Georgian style was adopted by the Commonwealth architects, combining utility, fire resistance, low maintenance cost and pleasing appearance. An effort was made at each building site to take advantage of natural features. At the time each of these buildings was planned the official health service was essentially preventive and educational in character. Various local groups, interested in the educational facilities provided by the buildings, were invited to make use of them. To encourage their use by practicing physicians, the Fund made small initial contributions to several of the health centers for the purchase of medical books and magazines. In most of the areas the local medical society uses either the library or the auditorium for its meetings. In the absence of local hospitals, provision was also made for diagnostic laboratory facilities for use by the practicing physicians. From experience gained in the construction and use of these buildings definite concepts of the requirements for a health center building have been developed by the Fund staff. In view of the increase in local health centers through the Hospital Survey and Construction program of the Hill-Burton Act and the bill sponsored by the National Congress of Parents and Teachers for financing local health units, this demonstration on health centers affords basic study material for all groups interested in the extension of better health and medical service, particularly in the rural areas.

The Epithelia of Woman's Reproductive Organs: A Correlative Study of Cyclic Changes. By George N. Papanicolaou, M.D., Ph.D., Professor of Clinical Anatomy, Cornell University Medical College, New York; Herbert F. Traut, M.D., Professor of Obstetrics and Gynecology, University of California Medical School, San Francisco; and Andrew A. Marchetti, M.D., Associate Professor of Obstetrics and Gynecology, Cornell University Medical College, New York. Cloth. Price, \$10. Pp. 53, with 21 illustrations. The Commonwealth Fund, 41 E. 57th St., New York 22; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1948.

Here is the fundamental textbook on the Papanicolaou method for determining the presence of cancer. The book reports studies made since 1937 involving examination of the organs of 233 women and covering examination of more than 10,000 specimens. The organs concerned are the ovaries, tubes, various portions of the uterus and vagina. After a consideration of the problems involved in menstruation, chapters are devoted to the epithelium of the tissues concerned and to the cytology of various secretions and excretions. The studies are correlated with the menstrual cycle. Of greatest value in the work are a series of more than twenty magnificent colored plates and a final production indicating in color the cytology of the normal menstrual cycle. The book is invaluable for every physician who attempts this type of work.

Basic Facts of Health Education for Members of the Medical, Pharmaceutical and Nursing Professions. Selected Articles from the Ministry of Health Bulletins which have appeared in the *Pharmaceutical Journal*, 1913-1917. Boards. Price, 7s.6d. Pp. 193. The Pharmaceutical Press, 17 Bloomsbury Square, London, W.C.1, [1918].

This book is a compilation of selected items from the Bulletin of the British Ministry of Health which have appeared in *The Pharmaceutical Journal*. In 1943, the Pharmaceutical Society suggested to the Ministry of Health that means should be established so that pharmacists might obtain first hand knowledge of matters engaging the attention of the Ministry of Health. The issue of a bulletin at regular intervals was decided on, and the Pharmaceutical Society offered to publish these bulletins in its journal. The first of these appeared in January 1944 and others were published subsequently at quarterly intervals.

The fifty-two bulletins published in this volume cover a wide variety of topics starting with positive health and including such subjects as dental disease, importance of pure water, food poisoning, cancer, several on the menstrual function, a number on the common contagious diseases of childhood, dust in the home and factory, BCG vaccination, several on the venereal diseases, blood banks and plasma, and geriatrics. Each of the bulletins is brief, averaging from 3 to 4 book size printed pages. The book is well indexed. The principal interest attaching to these bulletins for American readers is the background which they give of the British attack on health education. Medical and pharmaceutical cooperation is being developed in the United States; this book may contain suggestions as to how it can be most constructively carried forward, bearing in mind differences between British and American conditions.

Tomorrow's Food: The Coming Revolution in Nutrition. By James Rorty and N. Philip Norman, M.D. Foreword by Stuart Chase. Cloth. Price, \$3.50. Pp. 258. Prentice-Hall, Inc., 70 Fifth Ave., New York 11, 1947.

Obviously Rorty's enthusiasm ran away with Dr. Norman's science. In addition to many inaccuracies this book is studded with ill founded generalizations concerning the American physician, his British colleague, the National Research Council's Food and Nutrition Board, and the Council on Foods and Nutrition of the American Medical Association.

The text of the book is concerned with a back to nature movement in nutrition with which almost all nutritionists are in accord; however, the authors fail to realize that this can be accomplished only by public education and guidance and not by ax-swinging iconoclasts.

Among some of the more blatant passages are the following: In reference to the National Health Insurance Act in Britain, "An increase of sickness among his panel patients brought no increase of income to the doctor. It meant only more work and less sleep; whereas less sickness meant more leisure for study and recreation, as well as a better chance to supplement his income by attending, on a fee for service basis, the middle class and upper class patients not covered by the Act. Hence, having thus acquired a vested interest in health, he proceeded to do something about it."

"These are the adrenal glands, than which there is no richer source of vitamin C in either animal or plant tissues." [Except green peppers, red peppers, parsnip greens, guavas, rose hips, and West Indian cherries, to mention but a few.]

"In the Mongolian idiot, the gyrus cingulum of the brain is missing. . . ." The authority in this case must be Mr. Rorty or Godey's *Lady Book*.

"Mass production of eggs—which gives us nonfertile eggs, devoid of an essential hormone."

"Homogenized milk! Can this be an oversight on the part of Divine Providence—did He forget to place an egg beater in the cow's udder?"

"All that one could be sure of was that since the food industry paid the piper, it would insist, in the end, on calling the tune. Most of the members of the Food and Nutrition Board were also connected with or dependent upon one or several of these various [industry-supported] committees and foundations. Hence when the industry supported Nutrition Foundation caught cold, the A. M. A.'s Food and Nutrition Committee sneezed; . . ."

These statements typify the book. While there is much material in this book with which no modern nutritionist would disagree, it is inextricably intermingled with nonsense and wild accusations.

British Surgical Practice. Volumes I and II. Under the General Editorship of Sir Ernest Rock Carling, F.R.C.S., F.R.C.P., Consulting Surgeon, Westminster Hospital, London, and J. Paterson Ross, M.S., F.R.C.S., Surgeon and Director of Surgical Clinical Unit, St. Bartholomew's Hospital, London. Cloth. Price, each volume, \$15; \$125, per set of 8 volumes and index. Volume I, pp. 536, with 228 illustrations. Volume II, pp. 575, with 318 illustrations. C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3; Butterworth & Co., Ltd., 4-5 Bell Yard, Temple Bar, London, W. C. 2, 1947 (Volume I) and 1948 (Volume II).

These are the first two volumes of an eight volume survey of surgical practice in Great Britain. The editors state in the introduction that this is not intended for the experts. Nor is it intended for the medical student. Primarily, it is a thoroughly practical review of British surgery designed for surgeons with limited access to libraries. Under the supervision of the editors an imposing roster of contributors have compiled these volumes. A simple straightforward account of each subject has successfully eliminated the often cumbersome erudition which frequently characterizes overseas expositions of surgical material. The arrangement of contents is encyclopedic.

Each author is an authority in his field and the material is presented in matter of fact style. Marginal annotations, paragraphic headings and pre-chapter outlines render the information readily accessible. Suitable references are appended to each chapter. Those familiar with previous publications in the field of surgery emanating from England will recognize a distinct superiority in this enterprise. There is an absence of the usual deadwood and little use of vague eponymic terms. It was a little surprising to run across a rather fulsome description of Sclavo's serum for anthrax, although penicillin was somewhat cautiously recommended instead.

The books are amply illustrated. It is difficult to recommend their purchase in this country where medical libraries and medical literature are widely distributed. An undertaking of this type is expensive and subsequent revisions to keep pace with rapidly expanding fields of medicine and surgery may render the project a poor investment. However, the purpose thus far seems to be satisfactorily accomplished.

Human Neuroanatomy. By Oliver S. Strong and Adolph Elwyn, Associate Professor of Neuroanatomy, College of Physicians and Surgeons, Columbia University, New York. Second edition. Cloth. Price, \$8. Pp. 442, with 336 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1948.

A review of the first edition of this excellent textbook was published in *THE JOURNAL* in 1943, in volume 122, p. 1214. A chapter on peripheral and segmental innervation has been added, which, curiously enough, starts with the second cervical but says not a word about the cranial nerves. The other major change is a much enlarged chapter on cerebral circulation. It is gratifying to encounter, among other things, the veins of Trolard and Labbé in a student's textbook. There is a tendency to make revisions less thorough than they might be. One can only hope that future editions will include allusion

to the work of J. Z. Young or P. Weiss on nerve fibers, to that of Caspersson and his school on the cytochemistry of the nerve cell and to that of Snider and others on the cerebellum. Even as it is, the reader will find this book with its well selected and carefully prepared bibliography highly useful and instructive.

Textbook of Gynecology. By Emil Novak, M.D., F.A.C.S., Assistant Professor of Gynecology. The Johns Hopkins Medical School, Baltimore. Third edition. Cloth. Price, \$8. Pp. 742, with 484 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Ave., Baltimore 2, 1948.

The first edition of this book bore the title "Gynecology and Female Endocrinology" and, whereas the second and this edition do not include "Female Endocrinology" in the title, this subject still forms a large and important part of the book. As in the previous editions the author does not discuss operative procedures but takes up the anatomy and physiology of the pelvic organs and the diagnosis, pathology and treatment of practically all gynecologic conditions which are encountered. Throughout the book there is evidence of the author's vast experience as a gynecologist, endocrinologist, pathologist and teacher. The discussions are in simple language and the advice given is practical and conservative. The illustrations are abundant, beautiful and instructive. Many new ones have been added in this edition. The bibliography at the end of each chapter is limited to the best articles on the subject under discussion. The publishers should omit from their advertisement on the jacket the following sentence, "The references are chiefly to those publications most worth while, most recent and written in English." Novak properly lists many important papers which were published in the German language, and some of them were written long ago but are nevertheless of great value even today. The excellent chapter on "Common Disorders of the Female Urinary Organs" by Houston S. Everett is retained with revisions in the book. This edition like the previous ones, should prove to be most popular and helpful to students and general practitioners because the author has produced a splendid book and the publishers also have done their part admirably.

Modern Clinical Psychiatry. By Arthur P. Noyes, M.D., Superintendent, Norristown State Hospital, Norristown, Pennsylvania. Third edition. Cloth. Price, \$6. Pp. 525. W. B. Saunders Co., 218 W. Washington Sq., Philadelphia 5, 1948.

The present volume represents the third edition of Dr. Noyes' textbook of modern psychiatry. Probably the principal criticism of this work is the repeated introduction of theoretic concepts that have proved themselves inaccurate and therefore worthless. A sound school of psychiatry is the school which attempts to understand and reconstruct the dynamic mechanisms underlying personality development, both normal and abnormal. Apparently Dr. Noyes is not in complete agreement with this concept. One wishes that he had been more specific in presenting modern progress as developed during and since the last war. With the exception of the foregoing criticisms this is a good textbook. There is a reasonably good bibliography which the student is urged to use.

El electrocardiograma en la hipertensión arterial. Por Eduardo Joaquín Canabal. Tesis de doctorado. Prologado por Paul D. White. Epilogado por Rigmund H. Smithwick, profesor de cirugía, Boston University School of Medicine, Boston. Paper. Pp. 213, with 31 illustrations. El Ateneo, Florida 340, Córdoba 2099, Buenos Aires, 1947.

This thesis, appearing as a monograph, represents the work done by the author during his stay in Boston on the service of Dr. Paul D. White, who writes the foreword, and of Dr. R. H. Smithwick, who has written an addendum presenting his point of view on the value of surgery in essential hypertension. The author considers the electrocardiogram in hypertension first from the historical point of view and describes the present state of knowledge, as regards both standard and precordial leads. The electrocardiographic changes occurring postoperatively after the Smithwick operation are compared with those occurring spontaneously. An addendum is presented as to the theory of V limb leads. Much of the material in this monograph has appeared in earlier publications in English, but it is useful to have it all collected in one volume in Spanish. There are English summaries at the end of each of the seven chapters.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BEE STING PROPHYLAXIS

To the Editor:—A girl patient aged 5, is sensitive to bee stings. She has been stung only twice, but these were both severe episodes. She became unconscious and cyanotic within sixty seconds after the sting. The first time she was unconscious about thirty minutes; the second about two hours. She was in extreme shock. What can be done to protect this child from bee stings? M. A. Skillington, M.D., Glendive, Mont.

ANSWER:—For immediate relief of this child from the symptoms of bee sting a hypodermic injection of 1:1,000 epinephrine, 0.2 cc., should be efficacious. If necessary, 0.5 cc. of epinephrine may be held under the tongue, in lieu of injection, care being taken not to swallow any of the drug. Antihistaminic drugs, such as diphenhydramine, triphenylamine or "neo-antergan" (N-[p-methoxybenzyl]-N,N'-dimethyl-N- α -pyridylethylene-diamine) may be given orally as a substitute if epinephrine is not available. In case of shock, strychnine, 1/120 to 1/100 grain (0.5 to 0.6 mg.), is the ideal relief medicament given hypodermically.

The main concern, however, is prophylaxis. This consists of hypodermic injections of aqueous or isotonic sodium chloride extracts of the ground whole body of the bee in suitable and ascending dosage. The extract can readily be prepared in any good laboratory. A proper bulk of ether-killed honey bees, e.g., 1 ounce (28 Gm.), is shaken up thoroughly with ether to remove pollen adhering to the bees' bodies, and then dried. It is then ground in a fine food grinder, and a definite weight, for instance, 5.0 Gm., is mixed with 50.0 cc. of equal parts glycerine and isotonic sodium chloride solution. After standing in the refrigerator over night the extract is filtered off through a Berkfeld or Seitz filter, to insure sterility, and labeled "bee extract 1:50 by weight-volume." Sterile glassware must of course be used throughout.

Further dilutions should be made in sterile isotonic sodium chloride solution by adding 0.5 cc. of the 1:50 extract to 9.5 cc. of sterile isotonic sodium chloride solution, giving a 1:1,000 extract by weight-volume. In the same way a 1:10,000 dilution may be prepared, by adding 1.0 cc. of the 1:1,000 extract to 9.0 cc. of isotonic sodium chloride solution. In like manner a 1:100,000 and a 1:1,000,000 dilution may be prepared.

Testing the patient may then be started by injecting 0.02 cc. of the 1:1,000,000 dilution on the flexor surface of the patient's arm intradermally. The immediate or twenty minute wheal should be noted, if any, and the twenty-four hour reaction, consisting usually of erythema. If neither of these is large enough to be significant, a similar injection may be given of 0.02 cc. of 1:100,000 dilution; and if no significant reaction is obtained, the 1:10,000 extract may be tried the next day. As soon as a significant immediate wheal or a noteworthy twenty-four hour erythema is observed, increasing doses may be given every other day until the dosage of the dilution concerned reaches 1.0 cc. A good schedule for this purpose is 0.05 cc., 0.10 cc., 0.2 cc., 0.3 cc., 0.4 cc., 0.6 cc., 0.8 cc., 1.0 cc. After that the successive higher concentrations may be employed similarly. In any case, 1.0 cc. of 1:1,000 extract should be adequate. When this dosage has been attained, it is usually advisable to discontinue treatment. Another suitable course of inoculations can be given at a later time if the patient encounters further trouble. In most cases, however, it has been found that the result is not only satisfactory from the point of view of protection, but is even permanent over a period of years.

Almost any bee keeper will be glad to furnish a small quantity of bees as an accommodation. A further precaution, however, is essential. The patient should be carefully tested for all of the prevailing pollens in his environment. Otherwise, he may be getting additional sensitization phenomena from pollen adhering abundantly to the bees' bodies and not entirely washed off by the ether. It is of course desirable, in addition, to have a general allergic testing by one familiar with allergenic technic.

PETROLEUM ASH

To the Editor:—What is the occupational hazard involved in cleaning out boilers fired by oil, using a vacuum apparatus? My patient does this for about six months every year. His chief complaint is a bad taste in the mouth and copious expectoration. He is 40 years old and also under treatment for duodenal ulcer.

Stephen Ivanoff, M.D., Stony Point, N. Y.

ANSWER:—The prospect of substantial damage from the residue of oil-burning furnaces is not great. In some respects such residue is similar to the fly ash from coal-burning furnaces. Fuel oils have widely scattered origins, and, correspondingly, some diversity in chemical constituency may be expected. The statements to follow definitely do not apply to all fuel oil residues. In any ash some silicates are present and at least traces of silica are expectable. Since silicates, with the exception of asbestos, are comparatively harmless, and since the content of silica is minor, no pneumoconiosis other than benign may be anticipated even though great dustiness exists. Some fuel oils are reputed to yield an ash with a significant content of vanadium, a harmful metal. Should dust inhalation lead to vanadium poisoning, the commoner manifestations would be anemia, loss of weight, inflammation of the respiratory tract, dry cough followed by bleeding, diarrhea or constipation, renal complications and "neuritic" manifestations. It may be observed that these manifestations are shared by other diseases and their occurrence is not pathognomonic of vanadium poisoning. Without forecasting any probability of vanadium poisoning from the occupation mentioned, note is made of one outstanding publication on that topic: Wyers, H.: Some Toxic Effects of Vanadium Pentoxide, *British Journal of Industrial Medicine*, 3:177, 1946. Occasionally in trades similar to the one mentioned mercury poisoning arises. The mention of marked ptialism and foul mouth tastes suggest mercury poisoning. Among other features of that disease, the following occur: sore mouth, bleeding gums, ptialism, discolored gums, gastroenteric ailments, foul or metallic breath, sleeplessness, melancholia, a peculiar eczema, speech difficulties, amnesia, mercurial excitement and anxiety. Since the American Standard Association's upper limit of the tolerable is only 1 mg. in the day's intake of air, any content of mercury compounds in oil ash becomes noteworthy. While mercury poisoning in the trade mentioned is certainly not common, the symptoms indicated call for further exploration.

POLAR BEAR LIVER

To the Editor:—In several Survival Manuals published by the Armed Services it is stated that the livers of both the polar bear and the bearded seal are poisonous. I have not been able to learn what the type of poison is or whether this is an actual fact. Can you give me information or references on this subject? Is it possible that excessively high vitamin D content of the liver might cause illness?

Charles H. Morhouse, M.D., Randolph Field, Tex.

ANSWER:—Although it has been generally recognized that eating of polar bear liver by men and dogs usually causes severe illness, some Arctic investigators have tended to be skeptical in this regard. It has also been reported that the liver of the bearded seal is poisonous, and the opinion on this point is even less unanimous.

However, the work of K. Rodahl and T. Moore in 1939-1940, which appeared in *Biochemical Journal* (37:166, 1943), indicates that the toxicity is due to the high concentration of vitamin A contained in the polar bear and bearded seal liver, and the ingestion of more than small amounts of liver results in hypervitaminosis A. Reference is also made to an account by J. K. Douth, which appeared in the *Journal of Mammalogy* (21:356-357, 1940).

COFFEE GROUND EMESIS

To the Editor:—As an anesthetist I have noted on several occasions the vomiting of coffee ground fluid in the immediate postoperative period. None of the operations were related to the stomach. The cases were usually appendectomies and the pathology not that of acute appendicitis. What is the significance of such postoperative coffee ground emesis?

Saul Dworkin, M.D., St. Louis.

ANSWER:—Duodenal ulcer, gastric ulcer or varicosities might, under certain circumstances, cause signs and symptoms leading to a diagnosis of appendicitis. Excoriations of the mucosa of the upper respiratory or digestive tract might result in swallowing of blood. Partially digested clots of blood mixed with other material in the stomach often give a characteristic "coffee ground" appearance to vomitus. There is no significance to the observations cited other than that blood or a similar substance had probably entered the stomach some time before vomiting occurred.

SUDDEN DEATH

To the Editor:—Recently a man, aged 50, died suddenly during an exciting episode while engaged in a game of cards. I had examined him about one year ago because of missed heart beats, which occurred particularly in excitement. His physical examination, including determination of blood pressure and electrocardiogram, did not reveal any abnormality. I therefore assured him that this symptom had no particular meaning, to disregard it, and prescribed a mild sedative. Since the heart standstill was caused, in all probability, by the same mechanism which caused the missed beats, could this death possibly have been prevented if I had placed this man on minimal doses of quinidine to maintain normal sinus rhythm? Might not a good many of the sudden deaths due to cardiac diseases be similar to this one, and, if so, would it not be good practice to administer quinidine in all cases of recurrent arrhythmias, as protection against such an incident? What plan and dosage should be followed?

M.D., New Jersey.

ANSWER:—Most persons who die suddenly and unexpectedly have cardiovascular disease. In a recent postmortem study of 2,030 such cases in the Borough of Manhattan, New York City, in 45 per cent death was attributed to diseases of the heart and aorta (Rabson, S. M., and Halpern, M.: Sudden and Unexpected Natural Death, *Am. Heart J.* 35:635 [April] 1948).

The exact mechanism of death in the patient mentioned is of course uncertain—it may have been cardiac standstill or ventricular fibrillation. Quinidine sulfate in doses of 3 grains (0.19 Gm.) three times daily is usually effective in lessening cardiac irritability and perhaps is often life saving in preventing fatal ventricular fibrillation. For this reason protective doses are often employed during the first few weeks following myocardial infarction. Quinidine might have prevented a fatal arrhythmia in the patient cited, if such was the mechanism of his death.

No mention is made of a postmortem examination, but cardiovascular disease existed notwithstanding the normal physical examination and electrocardiogram.

PERNICIOUS ANEMIA

To the Editor:—A woman aged 38 has had pernicious anemia for the past ten years. Three months ago she noticed numbness and paresthesia of the right mid thigh about the size of a saucer. She had been taking liver extract, with vitamin B capsules irregularly. She resumed the usual dosage during the latter month. The red cell count is now 3,400,000 with a color index of plus 1. The paresthesia extends from the right hip to the knee. In addition to liver extract she is receiving folic acid. Should liver extract be given by injection even if she exhibited a marked local reaction to it previously or are capsules sufficient? What is the significance of a gingivitis in this case? Is it considered contributory to the pernicious anemia or a result of it as so many dentists claim?

M.D., West Virginia.

ANSWER:—It is questionable whether the unilateral numbness in the thigh is a neural manifestation of the pernicious anemia. If there is a relationship, this symptom should improve with adequate liver therapy. Concentrated liver extract, 15 units per cubic centimeter, given parenterally every two or three weeks, is the treatment of choice in pernicious anemia.

If the local reaction occurred with an extract of hog liver, a trial should be given with beef liver extract (Lederle). Patients often lose their sensitivity to liver given parenterally if the injections are discontinued for a few months. During this time, remission may be maintained with an oral preparation of liver, 1 to 2 units daily or with 10 to 20 mg. of folic acid daily. As folic acid does not prevent the progression of cord damage, patients receiving this therapy should be observed closely for the appearance or increase of symptoms and signs referable to the nervous system.

The chronic gingivitis in this patient probably is unrelated to the pernicious anemia.

PREGNANCY TESTS

To the Editor:—What is present opinion regarding the use of rats as compared to rabbits in testing for pregnancy? What method prevails in the hospitals?

John Tennyson Myers, M.D., New York.

ANSWER:—Using rabbits in the Friedman test, with careful technic, and careful isolation of the animals to rule out false positive reactions, one may approach better than 92 per cent accuracy. By use of immature mice or rats in the Asheim-Zondek test, the accuracy approaches 98 per cent. Usually in the latter test, more than one animal is used.

Most hospitals use the rabbits because they are possibly easier to handle; the ear vein is used for the injection.

QUINIDINE SULFATE

To the Editor:—A 63 year old patient who had severe coronary thrombosis seven years ago has been getting along fairly well since. Recently he complains of annoying extra systoles. He now takes quinidine sulfate 3 grains (0.13 Gm.) three times daily to control this symptom. Is the continued use of quinidine harmless? Is there other medication (besides barbiturates) which can be used for control of this disagreeable symptom?

M.D., New Jersey.

ANSWER:—Quinidine sulfate is the most useful drug available for control of premature beats. Rarely hypersensitivity exists; when it is present even a single dose may result in urticaria, nausea and vomiting. Most patients tolerate the drug in the dosage mentioned without difficulty for long periods of months or years without gastrointestinal or eighth nerve symptoms. The writer is acquainted with a patient who has taken quinidine sulfate in this dosage almost constantly for fifteen years. Occasionally it is mildly laxative but appears to be otherwise harmless.

Other than sedatives and the omission of caffeine and tobacco, few drugs are of special value in this connection except quinidine (or quinine). Occasionally in patients with more troublesome cardiac irritability and paroxysmal auricular tachycardia, digitalis or squill has helped when quinidine has failed.

"HAPAMINE"

To the Editor:—Are there cases on record of injections of "hapamine" causing a flare-up of rheumatoid arthritis? A 27 year old male patient without history of rheumatism was given penicillin mist and "hapamine" for sinusitis. On his fifth injection of "hapamine" pain and swelling developed in one knee. On his sixth injection, three days later, he developed hot swollen joints in one leg, high grade fever, general malaise and tenderness of sinuses. Could this be due to "hapamine?"

J. R. Bunch, M.D., Laramie, Wyo.

ANSWER:—"Hapamine" is a conjugate prepared by azo linkage of histamine and despeciated horse serum globulin. Reactions to this substance are possible for several reasons. In spite of the fact that for the most part the antigenic properties of the globulin in this preparation have been modified by an enzyme process, there is an occasional evidence of a specific reaction in a horse serum sensitive person. Such a reaction would show itself by symptoms occurring within a few minutes to a few hours and consisting of one or more of the following manifestations: urticaria and angioneurotic edema, rhinitis, asthma, anaphylactic shock and other possible effects. Serum sickness type of reactions, consisting of urticarias, pains in the joints and fever, and occurring several days after the injection, are also possible. In addition, "hapamine" may act as a purely nonspecific protein and may produce such effects as described. A closer approximation could be made of the possible role of "hapamine" in the reaction under discussion if the chronologic details were given more fully. From the evidence at hand the reaction could be either coincidental or due to "hapamine." The possibility of a reaction to penicillin mist cannot be entirely ignored.

CATAPLEXY

To the Editor:—In *The Journal*, volume 137, page 118, May 3, 1948, appeared an inquiry concerning a "woman aged 27, who began to have periods of excessive weakness during periods of laughter." The inquirer asked about diagnosis and treatment. The answer as given is somewhat incomplete and inaccurate for the following four reasons: 1. The attacks are correctly classified as cataplexy and it is correctly stated that it is allied with narcolepsy. But the most important feature of this syndrome, attacks of sleep, which gives to it the name of narcolepsy, is not mentioned. Cases of monosymptomatic cataplexy are very rare and such patients should be carefully investigated also for the presence of concomitant narcoleptic attacks. 2. The answer states that cataplexy "is an organic condition due to a structural lesion in the corpora striata." It is generally assumed, however, that the site of the lesion in narcolepsy is the hypothalamic region, and not the corpora striata. 3. Administration of "benzedrine" for the attacks of cataplexy is recommended in the answer. But "benzedrine" is beneficial in narcoleptic and has little or no influence in cataplectic attacks. Potassium chloride should be recommended for the latter, 30 to 75 grains daily by mouth (Dynes, J. B.: *Cataplexy and Its Treatment*, *J. Nerv. & Ment. Dis.* 98:48, 1943). 4. Only 20 per cent of all cases of narcolepsy—in any form—are assumed to be postencephalitic. The statement as given in the answer that "cataplexy frequently follows an attack of epidemic encephalitis" appears doubtful therefore.

Robert Wartenberg, M.D., San Francisco.

COMMENT:—The hypothalamus is, of course, involved and so are the corpora striata. The use of potassium chloride is still in an experimental stage.—Ed.

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DIETARY TREATMENT OF CIRRHOSIS OF THE LIVER

Results in One Hundred and Twenty-Four Patients Observed
During a Ten Year Period

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The present report is an analysis of results obtained in the treatment of 124 patients with cirrhosis of the liver by means of a diet rich in protein and supplemented by concentrates of the vitamin B complex. In 1937 a preliminary statement¹ was made concerning favorable therapeutic results obtained in 13 patients who had been observed during the course of one year. The improvement appeared to exceed chance expectations. A more comprehensive report² in 1941 was made on 54 patients that had been studied over a four year period. The results tended to confirm the preliminary impression. With the new dietary regimen roughly one half of the patients showed signs of significant clinical improvement. These results were considerably better than those observed in a control series of 386 patients. However, since cirrhosis of the liver is a chronic disease and since its clinical course may vary considerably in different patients, the study was extended further in order to get a larger body of evidence and to get a clearer picture of the long term results of this therapeutic program.

RATIONALE OF TREATMENT

The rationale of treatment was based on clinical and experimental observations that have been described in previous papers.³ In brief, the frequency of dietary deficiency in patients with Laennec's cirrhosis suggested that there might be an analogy between the occurrence of "alcoholic" cirrhosis and that of "alcoholic" beriberi or pellagra. It seemed possible that malnutrition itself might play an important contributory role. The prevalence of cirrhosis in countries where nutritional deficiencies were endemic added further weight to this hypothesis.

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1. Patek, A. J., Jr.: Treatment of Alcoholic Cirrhosis with High Vitamin Therapy. *Proc. Soc. Exper. Biol. & Med.* **37**: 329, 1937.

2. Patek, A. J., Jr., and Post, J.: Treatment of Cirrhosis of the Liver by a Nutritious Diet and Supplements Rich in Vitamin B Complex. *J. Clin. Investigation* **20**: 481, 1941.

3. Patek,¹ Patek and Post,² Patek, A. J., Jr.: An Evaluation of Dietary Factors in the Treatment of 'Laennec's Cirrhosis' of the Liver. *J. Mt. Sinai Hosp.* **14**: 1, 1947.

Subsequent studies on laboratory animals by a number of different workers (notably György, Webster, Blumberg, Sebrell, Rich, Himsworth, Gillman and their associates) have firmly established the concept that dietary factors may play a significant part in the pathogenesis of this disease.

METHOD AND MATERIAL

In the past ten years approximately 160 patients with cirrhosis of the liver have been treated, of whom 124 were in the stage of hepatic failure. The present report deals with the latter group. The term failure is applied to the status of those patients who have had recent hematemesis or who show signs of ascites or jaundice in addition to other evidence of hepatic insufficiency, such as wasting, fever, gastrointestinal disturbances and changes in laboratory tests indicating hepatic dysfunction. The chief symptoms and signs and their percentage incidence are listed in tables 1 and 2, together with a similar tabulation of data for 386 patients with cirrhosis of the liver who served as a control group. The control group was composed of patients with cirrhosis who had been admitted to five New York hospitals during the years 1920 to 1940.⁴ The latter patients received bed rest, supportive care and diuretics, but no specific dietary measures other than a diet high in carbohydrate, low in protein and low in fat, which was in vogue during that period.

The patients being studied were transferred to the Columbia University Research Service from the wards of municipal and voluntary hospitals, and in the main they came from lower income groups. Many were transferred because they had not responded to treatment. They represent possibly a more refractory group than those entering a general hospital for the first time because of hepatic failure. Others were referred by hospital staffs aware of our interest in this disease. A degree of selectivity may have been introduced, in that patients who were considered critically ill generally would not be transferred. Nevertheless, 7 patients died within two weeks and 23 died within one month of entry.

Data showing the symptoms and signs of hepatic failure indicate fair agreement between the treated and control series of patients. It is assumed, therefore, that the severity of the underlying disease process was comparable in the two groups. In instances in which the incidence of certain symptoms and signs is higher in the treated series, the difference may be ascribed in part to more detailed case histories and prolonged study in the treated series. Likewise, such features as fever, vascular spiders, subclinical icterus and signs of specific malnutrition usually were disregarded or ignored in the control series.

4. Ratnoff, O. D., and Patek, A. J., Jr.: The Natural History of Laennec's Cirrhosis of the Liver, *Medicine* **21**: 207, 1942.

Evidence of malnutrition was noteworthy. Ninety-one patients (73 per cent) had subsisted on poor diets, deficient particularly in meat and dairy products. In 89 per cent of these patients there was significant loss of weight, and in 36 per cent there was polyneuritis. Atrophy of the tongue papillae, dry scaly skin and macrocytic anemia were frequent observations.

TABLE 1.—Clinical Data on 124 Patients with Cirrhosis of the Liver

	Treated Patients * (124)		Controls † (386)	
	Number	Per-centage	Number	Per-centage
Male patients.....	81	65	267	69
Female patients.....	43	35	119	31
Antecedent factors				
Alcoholism.....	95	77	207	54
Malnutrition.....	91	73	67	17
Syphilis.....	26	21	62	16
Arsphenamine therapy.....	19	15	34	9
Anilent jaundice.....	5	4	25	6
Symptoms				
Weight loss ‡.....	88	69	206	53
Anorexia.....	97	78	135	35
Vomiting.....	63	51	115	30
Abdominal pain.....	62	50	121	31
Epistaxes.....	50	40	70	18
Hematemesis.....	42	34	106	27
Signs				
Ascites.....	115	93	301	78
Palpable liver.....	98	79	291	75
Peripheral edema.....	86	69	236	61
Jaundice.....	83	67	252	65
Vascular spiders.....	77	62	58	15
Dilated veins.....	76	61	91	24
Palpable spleen.....	69	55	170	44
Fever.....	61	49	93	24
Esophageal varices §.....	69	48	..	..
Atrophy of tongue.....	69	48	..	..
Mental changes.....	48	38	..	..
Polyneuritis ||.....	45	36	40	13
Abdominal hernia.....	41	33	30	9
Clubbing of fingers.....	29	18	21	5
Hydrothorax.....	22	17	25	6

* Average age 48.8 years.

† Average age 50 years.

‡ Data obtained in 99 cases.

§ Includes cases of hematemesis and those in which the disease was demonstrated by roentgenologic studies or at autopsy.

|| Diagnosis restricted to those with both motor and sensory changes.

The diagnosis of cirrhosis of the liver was based on clinical observations alone in 51 cases (41 per cent), established by biopsy or by autopsy in 73 cases (59 per cent). Differentiation is not made in the tabulation (table 1) between patients with Laennec's cirrhosis and those with the postnecrotic type (coarsely nodular toxic cirrhosis), since this distinction was not made in the control series. In 15 instances, cirrhosis was presumed to be of the postnecrotic type. In 7 of these, the diagnosis was confirmed at autopsy. If additional cases of postnecrotic cirrhosis occurred in this series they were probably few.

Program of Treatment.—On admission to the hospital the patient accepts bed rest without protest. He is usually mentally dulled, weak and distended with ascites. Fever and low grade jaundice frequently are present. With improvement, he asks for more freedom and he is allowed to be semiambulatory. Since hospitalization may require months, strict bed rest is not enforced for more than one half of the day.

Chief emphasis is placed on the diet, a detailed scheme of which appeared in a previous report.² In contrast to the traditional American diet prescribed for hepatic disease, which was high in carbohydrate but low in protein and fat, the present diet is rich in protein and ample in carbohydrate and fat. It contains 140 Gm. of protein,⁵ 365 Gm. of carbohydrate and 175 Gm.

of fat—a total of about 3,500 calories. The diet consists chiefly of meat, milk, eggs, fruit and green vegetables. Eggs are served with breakfast; meat, fish or poultry is served at dinner and supper; milk is served three times with meals and twice between meals, with 25 Gm. of yeast, in the form of milknog. If the patient eats these foods, considered basic to the program, the remainder of the diet is largely a matter of choice. The charting of the estimated food intake for each meal (1 to 4 plus) provides a stimulus to the patient and serves as a useful record. In certain cases a semisolid diet² is indicated, and in a few, when the patient is drowsy or stuporous, a regimen of liquids is prescribed.⁶ Yeast is fed in graded increasing dosage until 25 Gm. are fed twice daily. For patients who do not tolerate yeast (because of distention, diarrhea or nausea) an orally administered B complex preparation⁷ is substituted. Thiamine hydrochloride (5 mg. daily) and unconcentrated liver extract (5 cc. twice weekly) are injected intramuscularly. If the patient shows signs of severe polyneuritis or of mental confusion thiamine hydrochloride (100 mg.) and nicotinamide (300 mg.) are administered daily parenterally.

Patients with ascites are allowed fluids up to 2,000 cc. daily or somewhat more in hot weather. Salt is moderately restricted by excluding its use in the preparation of food or on the tray. Abdominal fluid is tapped before the patient is greatly distended, since distention seriously curtails the appetite. Mercurophylline injection (2 cc.) is given once or twice weekly and is combined with the daily oral administration of 4 to 6 Gm. of ammonium chloride in enteric coated pills. Alcohol is interdicted. Since the patient seldom has much desire for alcohol when he is ill with cirrhosis and since he should abstain from drinking liquor after his discharge, there appears to be no purpose in permitting its use in the hospital.

The arts of nursing and dietetics are challenged by the problem of feeding a patient to whom food is distasteful and for whom life itself frequently has little interest. He needs cajoling, sympathy and much patience. This aspect of treatment cannot be over-emphasized.

TABLE 2.—Initial Laboratory Data on 124 Patients with Cirrhosis of the Liver

	Number of Cases	Per-centage
Sulfobromophthalein sodium dye retention > 10% *..	118	100
Positive reaction to Takata Ara or flocculation test †	109	94
Serum albumin < 3.5 Gm./100 cc.....	104	90
Increased serum bilirubin.....	47	58
Average initial serum albumin 2.8 Gm./100 cc.		
Average initial serum globulin 3.6 Gm./100 cc.		
Average sulfobromophthalein sodium dye retention in 30 min. 4.9 mg./100 cc. (49%)		

* Data obtained on 118 cases; the test was not performed in 6 deeply jaundiced patients. This test measures the percentage of dye retained thirty minutes after intravenous injection of 5 mg. per kilogram of body weight.

† Data obtained on 116 cases.

In patients with cholemia, slow intravenous infusions of 10 per cent dextrose are administered, totaling 2 or 3 liters in twenty-four hours. To each liter are added 100 to 150 mg. of thiamine hydrochloride, 300 to 400 mg. of nicotinamide and 100 mg. of riboflavin.

6. Liquid diets were: (a) An eggnog mixture, consisting of 1 quart of milk to which are added 50 Gm. of dried yeast, 4 eggs, 30 Gm. of sugar and ½ teaspoon of vanilla. This is stirred vigorously and kept cold. (b) Fruit juice mixture, containing 1 quart of fresh orange juice to which are added 40 Gm. of powdered gelatin (Knox). The mixture is then stirred. These mixtures are fed on alternate hours.

7. Vitamin B complex preparations, (30 cc.) made by Lederle Laboratories, Inc., or Wyeth, Incorporated, have been fed twice daily.

5. Includes protein in dried yeast.

This regimen is discontinued when the patient is able to take oral feeding. In many cases cholemia is precipitated by hematemesis or intercurrent infection, and in these cases the precipitating condition is treated vigorously.

For the care of hematemesis, transfusion of whole citrated blood by the slow drip method is performed as soon as possible, since delay may result in irreversible collapse of the patient. Transfusion is continued as long as there is evidence of bleeding. Plasma and dextrose (10 per cent) often are given intravenously as supportive measures. Food by mouth is withheld for two or three days. The patient is only lightly sedated, since he has a tendency to lapse into cholemia.

Intercurrent infections formerly accounted for about 25 per cent of the deaths from cirrhosis. With the advent of sulfonamide and antibiotic drugs, the dangers from infection have been sharply decreased. In the present series, sixty-four courses of sulfonamide drugs were administered to 43 patients, of whom 13 received sulfanilamide, 6 sulfapyridine, 8 sulfathiazole and 16 sulfadiazine. Pneumonia, phlebitis and cellulitis comprised the chief conditions treated. In 11 instances treatment with sulfonamide drugs was effective and may have prolonged life. Of these patients, 7 subsequently died of hepatic disease. Untoward reactions were experienced by 4 patients, 2 of whom were over 70 years of age.

Although instances have been cited⁸ of hepatic damage produced by sulfonamide drugs, the risk would seem to be justified when continued infection is the serious alternative. In this regard our experience confirms that of Peterson and his co-workers.⁹ However, since hepatic complications have not been described as the result of treatment with penicillin and other related antibiotics, these agents are generally to be preferred.

Specific Adjuvants.—The use of specific adjuvants for the treatment of cirrhosis of the liver has been reported in recent papers.¹⁰ It is difficult to evaluate effects from these agents, since in most instances the patients also received diets high in protein, similar to the diet employed in the present series. In an attempt to test these substances, 8 patients were selected the course of whose disease had become stabilized after three to twelve months of the standard dietary treatment in the hospital. They were in a state of constant

nonprogressive hepatic failure. Choline and methionine were administered, without changing the dietary regimen.

Three patients received 4 to 6 Gm. daily of choline hydrochloride for six, eight and ten months respectively; 5 patients received 3 to 4 Gm. daily of methionine for an average of three and six-tenths months. In 1 patient, who received methionine for seven months, slight clinical improvement was noted. No change was apparent in the others.

After an interval of at least three months (average period five months) subsequent trial of intravenously administered liver extract¹¹ was carried out in 6 of these patients for two to eleven months. The average weekly dosage was 37 cc. in 5 cases and 200 cc. in the sixth case. In 3 of the patients the intravenous administration of liver extract was associated with gain in appetite and well-being and gradual disappearance of ascites. (These patients had received thirty-three, seventy-five and one hundred and twenty-six abdominal taps, respectively, preceding intravenous treatment with liver extract.) There was concomitant improvement in laboratory signs. Whether the improvement coincident with treatment could be ascribed to the intravenous use of liver extract could not be proved.

In 4 other patients with signs of severe hepatic failure, intravenous treatment with liver extract failed to check the unfavorable course of their disease. Death occurred within one to three months of the inception of treatment.

Reports^{10k,1} on the use of concentrated human serum albumin solution suggest that this substance may prove to be an effective aid in treatment of cirrhosis, particularly to alleviate ascites formation. Our own experience¹² has been limited to studies of 3 patients who received 600 to 800 Gm. each in fourteen to sixteen days. In these patients no sustained diuresis or therapeutic benefit was apparent, even though normal values for serum albumin were attained. These patients had an unusually protracted course, with ascites formation and other signs of hepatic failure. It is possible that more prolonged administration of albumin solution would have been effective.

RESULTS OF TREATMENT

Of 124 patients who entered the hospital with signs of hepatic failure, 61 have shown some evidence of clinical improvement. Their improvement fulfilled three criteria: (1) disappearance of jaundice, ascites and edema, (2) gain in weight and strength and (3) improvement in results of various tests of hepatic function. They have been further classified as "recovered" and as "partially improved." The term recovered is applied to 43 patients who regained sufficient bodily vigor to resume normal activities. Three patients in this group enjoyed good health for over five years, but later died after a relapse of their disease. Four others died of illnesses unrelated to cirrhosis.

The term partially improved is applied to 18 patients whose jaundice, ascites and edema completely disappeared, but whose over-all improvement was inadequate for one of three reasons: (1) they failed to regain normal bodily vigor; (2) results of tests of hepatic function showed only slight improvement after treatment, or (3) their improvement was not sustained.

8. Watson, C. J., and Spink, W. W.: Effect of Sulfanilamide and Sulfapyridine on Hemoglobin Metabolism and Hepatic Function, *Arch. Int. Med.* 65:825 (April) 1940.

9. Peterson, O. L.; Deutsch, E., and Finland, M.: Therapy with Sulfonamide Compounds for Patients with Damage to the Liver, *Arch. Int. Med.* 72:594 (Nov.) 1943.

10. (a) Broun, G. O., and Muether, R. O.: Treatment of Hepatic Cirrhosis with Choline Chloride and Diet Low in Fat and Cholesterol, *J. A. M. A.* 118:1403 (April 18) 1942. (b) Rimmerman, A. B.; Schwartz, S. O.; Popper, H., and Steigman, F.: Dietary Factors in the Treatment of Cirrhosis Without Jaundice, *Am. J. Digest. Dis.* 11:401, 1944. (c) Russakoff, A. H., and Blumberg, H.: Choline as an Adjunct to the Dietary Therapy of Cirrhosis of the Liver, *Ann. Int. Med.* 21:848, 1944. (d) Herrmann, G. R., and Rockwell, P. A.: Reversible and Irreversible Disease of the Liver with Reference to the Effect of Choline, *Texas State J. Med.* 41:288, 1945. (e) Wade, L. J.: Recent Advances in the Therapy of Cirrhosis of the Liver, *M. Clin. North America* 20:479, 1945. (f) Beams, A. J.: The Treatment of Cirrhosis of the Liver with Choline and Cystine, *J. A. M. A.* 130:190 (Jan. 26) 1946. (g) Morrison, L. M.: The Response of Cirrhosis of the Liver to an Intensive Combined Therapy, *Ann. Int. Med.* 24:465, 1946. (h) Ralli, E. P.; Robson, J. S.; Clarke, D., and Hoagland, C. L.: Factors Influencing Ascites in Patients with Cirrhosis of the Liver, *J. Clin. Investigation* 25:316, 1945. (i) Labby, D. H.; Shank, R. E.; Kunkel, H. G., and Hoagland, C. L.: Intravenous Therapy of Cirrhosis of the Liver, *J. A. M. A.* 133:1181 (April 19) 1947. (j) Janeway, C. A.; Gibson, S. T.; Woodruff, L. M.; Heyl, J. T.; Bailey, O. T., and Newhouser, L. R.: Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation: VII. Concentrated Human Serum Albumin, *J. Clin. Investigation* 23:465, 1944. (k) Thorn, G. W.; Armstrong, S. H., Jr., and Davenport, V. D.: Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation: XXXI. The Use of Salt-poor Concentrated Human Serum Albumin Solution in the Treatment of Hepatic Cirrhosis, *ibid.* 25:304, 1946. (l) Kunkel, H. G.: Read at the Fifth Conference on Liver Injury, New York, Josiah Macy, Jr. Foundation, 1946.

11. The liver extract ("intraheptol") was supplied by Lederle Laboratories, Inc., Pearl River, N. Y.

12. Patek, A. J., Jr.; Mankin, H.; Colcher, H.; Lowell, A., and Earle, D. P., Jr.: The Effects of Intravenous Injection of Concentrated Human Serum Albumin upon Blood Plasma, Ascites, and Renal Functions in Three Patients with Cirrhosis of the Liver, to be published.

Eleven of these patients survived from two to five years after entry to the hospital. Fourteen of the 18 patients died during the ten year period of observation. In 4 instances, death was unrelated to cirrhosis.

Perhaps the most convincing evidence for the efficacy of dietary treatment is derived from 12 patients who

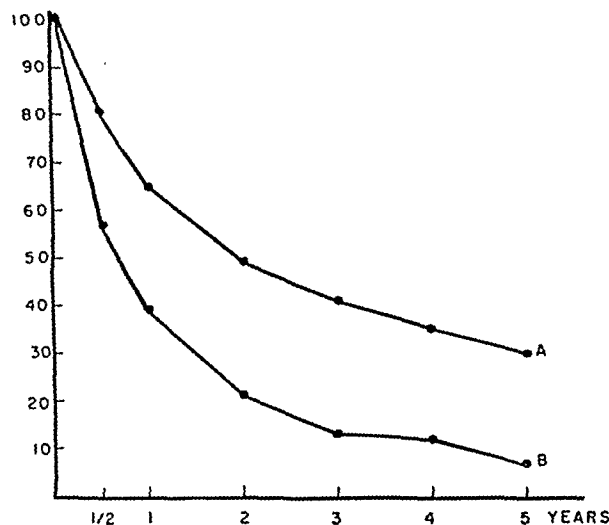


Fig. 1.—The survival of life after the onset of ascites in patients with cirrhosis. Computations beyond the fifth year were not used because there are too few cases to be of statistical importance. Line A represents the treated patients (115) and line B the controls (230). The vertical line of figures shows the percentage of patients alive.

had two or more satisfactory responses to treatment after having suffered repeated relapses. Characteristically, they fell into their former habits of alcoholism and grossly poor diets. Relapses were attributable in almost every instance to failure of the patient to continue with the prescribed dietary treatment after discharge from the hospital. In effect, they reproduced the conditions of the experiment. The fact that these 12 patients responded well to the same treatment on two or more occasions suggests that improvement resulted from treatment and that it was not "spontaneous."

Nine additional patients have shown signs of clinical improvement, but they are not included in the aforementioned groupings since their follow-up period was limited to a few months.

STATISTICAL EVALUATION

The period of survival in the present series was compared with that in the control series. The duration of life from the onset of ascites formed the basis of this comparison. (The method of computation is described in a previous paper.²) The greater longevity in the present series is shown in figure 1. At the end of one year, 65 per cent of the treated patients and 39 per cent of the controls were alive; at the end of two years, 50 per cent of the treated patients and 21 per cent of the controls were alive; at the end of five years 30 per cent of the treated patients and 7 per cent of the controls were alive. The differences between the two series appear to be significant.

SIGNS OF IMPROVEMENT

In general it requires several months of treatment before significant changes occur. The first intimations of improvement are gain in appetite and the feeling of general well-being. More objective changes take place later, namely, the subsidence of fever and disappearance of jaundice, ascites and edema. Figure 2 shows the disappearance of these four signs of hepatic

failure in 61 patients who showed clinical improvement. This figure portrays the duration of the signs after entry to the hospital, and it does not include the prehospital period, during which the signs were present, usually for months. Although there is individual variation, jaundice and fever tend to disappear more rapidly than ascites and edema. In most instances these four signs disappeared within three months.

Fever.—Fever, which occurred in one-half the cases, subsided in each instance with improvement. Deferescence was one of the early signs of recovery.

Jaundice.—The duration of jaundice preceding entry could not be estimated accurately, because many patients were unobservant of this sign. Moreover, jaundice usually was of low grade and intermittent. Thirty-one of the 61 patients who improved had jaundice at entry. The time of disappearance of jaundice varied from a few weeks to three years. In 75 per cent of the cases jaundice disappeared within two months.

Ascites.—Preceding entry to the hospital the average duration of ascites was seven and nine-tenths months in 115 cases. Ninety-two patients (80 per cent) had required abdominal paracenteses, and the average number of abdominal paracenteses was three and five-tenths in these cases. In 23 patients with ascites, abdominal paracenteses had not been carried out before admission. Diuresis and disappearance of ascites occurred in 58 patients, or 50 per cent of those with ascites. Frequently the complete disappearance of ascites required months after the onset of slow diuresis.

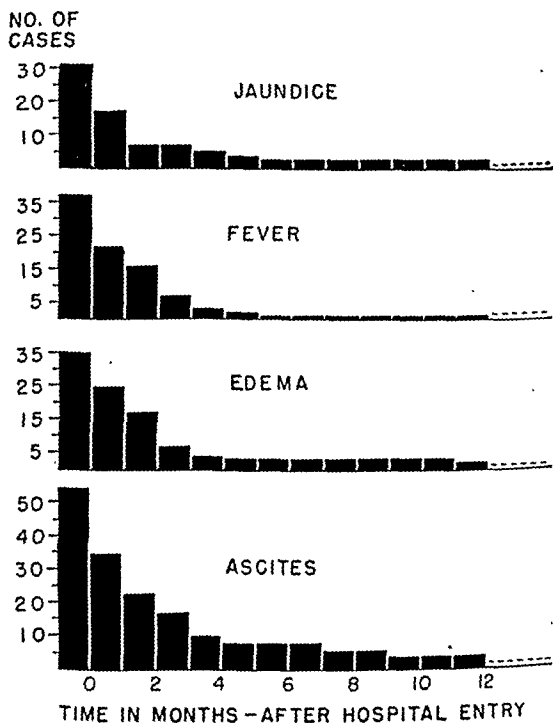


Fig. 2.—Disappearance of signs of hepatic failure in 60 patients with cirrhosis showing improvement after entry to the hospital.

Figure 2 indicates the time when ascites was not detectable. The time varied from two weeks to three years. Of those patients who lost ascites, 70 per cent were ascites free within three months.

Edema.—In general, the disappearance of edema preceded slightly and paralleled the loss of ascites.

Gain in Weight.—Gain in weight was observed regularly with improvement. When the patient entered the

hospital with edema or ascites, the initial values were falsely elevated. With recovery there followed a decrease until a net (dry) weight was attained and thereafter a gain in weight that was referable to body tissue.

Mental Changes.—Mental changes, characterized by orientation and change of mood (especially euphoria), occurred in 38 per cent of the patients. Recovery from hepatic failure was regularly accompanied with a change in attitude and by increased mental competence. The patient became oriented and reasonable, and he acquired insight into his condition.

Epistaxes.—Epistaxes, present in 40 per cent of the patients, abated in most cases with improvement.

Hematemesis.—Hematemesis (presumably from esophageal varices) occurred in 42 cases, fatally in 22. Although approximately one half of the patients died within one year of the first hemorrhage, there were patients that survived hematemesis for a long time. In the present series 9 have survived five years or longer without recurrence of hematemesis. Since about 10 per cent of patients with cirrhosis show peptic ulcer (post mortem), it is possible that in a few of the unautopsied cases there had been hemorrhage from this cause.

Vascular Spiders.—Vascular spiders were observed in 43 of the 61 patients that improved. In 17 patients they were noted to have disappeared, but it is reasonably certain that additional instances (not noted) occurred as well.

Cholemia.—Cholemia may be defined as a stuporous state associated with and presumably due to failure of the liver. It frequently is precipitated by infection or hemorrhage. In the past this picture of mental fogging, deepening into stupor and coma, almost invariably was a prelude to death. Yet, in the present series, 3 patients recovered from stupor and 3 from coma, and they survived for periods of months or years thereafter. In 4 other patients responses of several days or weeks were followed by fatal relapses. However, in 19 instances of cholemia treatment was of no avail.

Our experience tends to confirm the observations of Snell and Butt,¹³ who reported that dramatic recovery from cholemia may be achieved in certain cases by infusions of dextrose supplemented with large doses of thiamine hydrochloride and nicotinamide. That intravenously administered dextrose alone may have been an important factor is suggested by earlier observations by Jones.¹⁴

Amenorrhea.—There were 7 women of menstrual age among the 61 patients who improved. Six of these had observed amenorrhea, lasting from four months to two years. In all 6 patients there was return of normal menstruation coincident with other clinical changes previously described.

Polynuritis.—When polynuritis was present, there was almost invariable recovery from paresthesia, motor weakness and atrophy, but frequently there was little change in results of objective tests, such as vibratory sensation and tendon reflexes, despite many months of intensive treatment with thiamine hydrochloride and liver extract.

Results of Laboratory Tests.—In general the correlation between results of laboratory tests and the clinical course of the disease was only fair. There may be considerable lag before the tests reflect clinical changes. Indeed, results in certain tests, such as the test with sulfobromophthalein sodium, may remain unaltered for years despite sustained clinical recovery.

In our experience the value of serum albumin has corresponded more closely to the clinical changes than other criteria employed and thus has served as a fairly dependable guide to prognosis. When the serum albumin increased to a value of over 4.0 Gm. per hundred cubic centimeters and remained at that level, the patient showed other signs of recovery. The inability to achieve this value was seen usually in patients who failed or who made only partial improvement. The mean value for serum albumin before treatment was 2.8 Gm. per hundred cubic centimeters, and after treatment it was 4.2 Gm. in the 61 patients who improved.

Changes in serum globulin were erratic and consequently less helpful as laboratory aids. The mean initial value was 3.6 Gm. per hundred cubic centimeters and the mean value after treatment was 3.2 Gm. per hundred cubic centimeters in the 61 patients who improved.

In all instances the initial result in the test with sulfobromophthalein sodium showed increased dye retention. In 40 of the 61 patients showing improvement there was a significant decrease in dye retention, and in 9 the dye retention fell to within normal limits after treatment (i. e., less than 10 per cent at one-half hour). In 21 cases there was slight decrease or no decrease in dye retention, despite other signs indicating improvement.

Results of initial Takata-Ara or cephalin flocculation tests were positive in 53 of 61 patients who improved. In 5 instances the results were negative at entry, and in 3 others the data were inconclusive. In 21 instances the results became negative coincident with improvement.

Other tests, such as tests of serum vitamin A and carotene, galactose tolerance (intravenous), urine urobilinogen excretion, serum cholesterol and cholesterol esters and plasma prothrombin time, have been performed on selected groups of patients. These tests of hepatic function also reflect, in a crude fashion, the clinical status of the disease. The first three have been the subject of other reports.¹⁵ Since the tests were not carried out in the entire series, the results are not discussed in this paper.

Pathologic Changes.—There was poor correlation between the clinical course of cirrhosis and the gross or microscopic observations in the liver. The limited data obtained from this series suggest that clinical recovery seldom is accompanied with significant anatomic changes. The livers of 15 patients showed advanced cirrhosis in biopsies during the period of clinical improvement. Advanced cirrhosis also was found post mortem in 9 patients who previously had made partial "clinical recovery" and in 2 patients who had made "clinical recovery" but died of extrahepatic disease.

In 2 patients with severe decompensation, biopsies showed slight fatty changes several years after their

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recovery. Minimal changes were seen in 3 others who died of extrahepatic causes after making clinical recovery from cirrhosis. Thus, there were 5 cases in which histologic improvement might have taken place.

Serial biopsies were made only in a few instances. Although such information is desirable, it should be pointed out that the histologic picture may vary considerably in different areas of the cirrhotic liver and that biopsies obtained from different sites may not be strictly comparable.

FAILURE OF TREATMENT

Of 124 patients who entered with signs of hepatic failure, 54 showed no response to treatment. In many instances they were too ill to cooperate in the dietary program. It is possible that some of these patients had too little functioning hepatic tissue to respond to any mode of treatment. Seven patients died within two weeks and 23 within one month of entry.

In certain cases intercurrent infection or hemorrhage from ruptured esophageal varices proved to be more than these debilitated patients could withstand. There were 16 who died from infection and 22 from gastro-

being 43 years. Malnutrition was not conspicuous in this group. Only 1 patient drank alcohol to excess. The interval between antecedent hepatitis or jaundice and the onset of hepatic failure varied from six months to twelve years. During this interval some had shown persistent jaundice or other signs of hepatic injury, whereas in others the disease seemed to be latent. Despite vigorous dietary treatment, only 2 patients showed temporary remissions after the onset of hepatic failure. In brief, the younger age group, equal sex ratio, lack of malnutrition and the poor response to dietary therapy were features that suggested clinical differences from Laennec's cirrhosis. Although this group is too small to be of statistical importance, it may be well to keep in mind a possible clinical distinction between Laennec's cirrhosis and postnecrotic cirrhosis.

COMMENT

The present studies indicate that Laennec's cirrhosis is not of necessity a progressive disease, since the process appears to be arrested in a significant number of patients. Improvement in symptoms and signs of the disease and increased period of survival are effected by a highly nutritious diet, rich in protein and supplemented with vitamin B concentrates. These observations have been substantiated in other reports,¹⁶ some of which describe more favorable results with the added use of specific substances.

An appraisal of different therapeutic programs is difficult, because recent series of cases are not strictly comparable to those studied in the past. Modern methods for combating shock and hemorrhage, antibiotic drugs and longer periods of hospitalization doubtless modify the course of the disease. Thus, the relative effectiveness of different therapeutic programs may involve nondietary factors.

In statistical comparisons it is essential that large numbers be employed and that the case material be similar in kind. It is self evident that the most favorable results will be obtained when treatment is instituted at an early stage of hepatic failure.¹⁷ For example, in a recent report¹⁰ 37 per cent of the patients had received abdominal paracenteses before entering the hospital. It is difficult to compare this group with the present series, in which 74 per cent previously received paracenteses. The type of cirrhosis also may be an important consideration, for there is evidence that postnecrotic cirrhosis is less responsive to dietary treatment than Laennec's cirrhosis. When postnecrotic cirrhosis is present, less favorable results from dietary treatment may be anticipated. At present, the clinical differentiation of these two forms of cirrhosis is often impossible.

Experimental studies on animals have suggested that meat or meat juice may contain noxious substances that are not readily detoxified by the liver. However, in the patients under observation there was no apparent intolerance to animal proteins. On the basis of other studies, restriction of dietary fat has been advocated. The rationale stems from experiments which show that diets rich in fat, in conjunction with a low content of protein, predispose to hepatic injury. It may be

TABLE 3.—Principal Causes of Death in 75 Patients with Cirrhosis

	Number of Cases in Which Diagnosis Was Confirmed at Autopsy	Number of Cases in Which the Diagnosis Was Presumptive
A. Cirrhosis		
Cholemia.....	7	12
Gastrointestinal hemorrhage.....	10	7
Portal vein thrombosis, hemorrhage.....	4	..
Portal vein thrombosis.....	4	1
Pneumonia.....	6	2
Peritonitis.....	4	2
.....	2	..
.....	1	..
.....	3	1
B. Miscellaneous causes, nonhepatic.....	4	6
Cerebral hemorrhage (3), pyelonephritis, gunshot wound, pulmonary embolus, cardiac failure, renal tuberculosis, postoperative shock	—	—
Total.....	45	30

intestinal hemorrhage. Death from esophageal varices is in a sense accidental rather than an expression of impaired function of the liver. This appears to have been the case in 6 patients whose health was good in other respects. In the remaining cases of esophageal hemorrhage there were obvious signs of hepatic failure, the hemorrhage serving as a *coup de grâce*.

The chief causes of death for the entire series are listed in table 3.

POSTNECROTIC CIRRHOSIS (COARSELY NODULAR CIRRHOSIS)

On the basis of pathologic observations there appears to be good evidence for differentiating postnecrotic cirrhosis from Laennec's cirrhosis. In 3 well documented cases of the present series acute infectious hepatitis preceded hepatic failure by twelve, ten and five years, respectively. At autopsy the gross and microscopic observations were typical of postnecrotic cirrhosis. The fact that these cases remained "true to type" despite the long time intervals suggests that postnecrotic cirrhosis is an entity and not a stage in the evolution of Laennec's cirrhosis.

In the present series the disease in 15 cases was classified as postnecrotic cirrhosis. In 8 instances the diagnosis was based on presumptive clinical evidence, and in 7 instances the diagnosis was confirmed at autopsy. There were 8 men and 7 women. Seven of these patients were under 40 years of age, the average

16. Footnote 10 a-i. Fleming, R. G., and Snell, A. M.: Portal Cirrhosis with Ascites: An Analysis of Two Hundred Cases with Special Reference to Prognosis and Treatment, *Am. J. Digest. Dis.* 9: 115, 1942. Barker, W. H.: The Modern Treatment of Cirrhosis of the Liver, *M. Clin. North America* 29: 273, 1945. Hoagland, C. L.: The Therapy of Liver Diseases, *Bull. New York Acad. Med.* 21: 537, 1945. Labby, D. H.: Treatment of Hepatic Insufficiency, in *Cornell Conferences on Therapy*, New York, The Macmillan Company, 1947, vol. 2.

17. Patek, A. J., Jr.: Dietary Treatment of Laennec's Cirrhosis with Special Reference to Early Stages of the Disease, *Bull. New York Acad. Med.* 19: 498, 1943.

pointed out that when adequate protein is fed, no such deleterious effects have been produced. Severe restriction of fat decreases the palatability of the diet and thus tends to reduce the caloric intake. In the present regimen a diet containing 170 Gm. of fat did not cause steatorrhea. Moreover, biopsy specimens of the liver obtained in the course of treatment did not reveal fatty changes in the liver. A recent report by Labby and Hoagland¹⁶ on the treatment of acute hepatitis also concluded that severe restriction of fat is not justified by clinical evidence.

In recent years a number of reports have suggested that the administration of choline or methionine may produce effects apart from that provided by diet. For reasons stated, it is not easy to evaluate these reports. It is far more difficult to establish controls and to determine the role of a specific dietary factor in studies of human beings than in experiments with animals. Our own limited experience does not suggest that choline and methionine exert a specific effect in the late stage of hepatic failure. It would seem that their field of greatest usefulness might be in the precirrhotic fatty stage of the disease, since they are lipotropic agents. There appears to be no danger in administering these substances, but there may be harm in stressing their importance to the extent that other factors are neglected. Although observations on laboratory animals have established that choline and methionine protect against experimental cirrhosis produced by diets low in protein, the evidence for their curative effect has been less conclusive. Certainly, it has not been shown that these substances alone are adequate for repair or regeneration of the cirrhotic liver. It is possible that several factors may facilitate repair of the liver and restoration of function.

Since concentrated albumin solution was administered to only 3 patients, the present study does not help define its usefulness. In 3 of 10 patients given liver extract intravenously, added therapeutic benefit may have been observed.

The implications of the present study are essentially those stated in an earlier report.²

The present data give no indication as to whether vitamin B concentrates, protein or some unknown substances are specifically effective in the treatment of cirrhosis. It is possible that, by maintaining patients in optimal nutrition and rest, the liver recovers "spontaneously." In other words, the present regimen may allow the patient to survive long enough for natural reparative processes to take effect. It is also possible that the present regimen provides a specific agent for recovery of the diseased liver. The fact that only a limited number of patients survive despite therapy does not rule out the latter possibility. When the diagnosis of cirrhosis of the liver can be made in the incipient stages, the mortality rate should become much reduced, for, unlike most other vital organs of the body, the liver has the capacity to regenerate. In this capacity lies the hope for an effective therapy.

SUMMARY AND CONCLUSIONS

The present report describes results obtained in the treatment of 124 patients with cirrhosis of the liver in failure. The therapeutic regimen included a nutritious diet, rich in protein and supplemented with vitamin B concentrates, bed rest, abstinence from alcohol, diuretics and supportive care.

Evidence for clinical improvement was observed in 61 cases. Their improvement fulfilled three criteria: (1) disappearance of ascites, jaundice and edema. (2) gain in weight and strength and (3) improvement in

tests of hepatic function. It generally required several months before substantial changes took place.

The duration of life after the onset of ascites was significantly greater in the present series (115 cases) than in a control series (230 cases). At the end of one year, 65 per cent of the treated patients were alive and 39 per cent of the controls; at the end of two years, 50 per cent of the treated patients and 21 per cent of the controls were alive, and at the end of five years 30 per cent of the treated patients and 7 per cent of the controls were alive.

Therapeutic trial was made of choline, methionine, concentrated human serum albumin and liver extract administered intravenously in a small group of patients who had been refractory to treatment. The experience in this group is too limited to be of significance.

It is concluded that Laennec's cirrhosis is not, of necessity, a progressive disease. With early diagnosis and early institution of treatment the prognosis should become more favorable.

HAZARDS OF THIOCYANATE THERAPY IN HYPERTENSION

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The evaluation of any therapeutic agent in the treatment of essential hypertension is exceedingly difficult, because there is a tendency for exacerbations and remissions to occur spontaneously. Much has been written about the cures, but little about failure. In recent years thiocyanates have been used enthusiastically. This is an example of a custom, not too rare, of reviving and injecting new enthusiasm into ancient discarded treatments. The story of the thiocyanates began in 1903 with Pauli, who suggested the use of potassium thiocyanate as a hypotensive agent. The drug was little used until Westphal in 1924 presented a favorable report. In a few years the thiocyanates again fell into disrepute because of the frequency of toxic manifestations, until Barker in 1936 controlled the toxic effects by checking the level of thiocyanates in the blood. Since then numerous observers have concluded that the continuous administration of the drug under adequate control produces a persistent lowering of the blood pressure in normal persons, in about three fifths of those who have glomerular nephritis and in about one third of those who have essential hypertension.¹

PHARMACOLOGIC ASPECTS

The thiocyanate ion is similar in effect to the iodide ion. When ingested a high percentage of the drug is distributed to the extracellular fluid and thus influences the aggregation of colloids in a manner similar to the iodides and the other haloids. It is excreted chiefly by the kidneys, but more slowly and less completely than the haloids.

Potassium thiocyanate has a sedative action in moderate dosage.² In lethal doses it is irritating to the anterior horn cells.³ Symptoms varying from mild

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drowsiness to toxic psychosis have been reported. It has a paralytic action on muscle similar to that produced by curare.^{2a} Certain effects on the blood have been emphasized, particularly the reduction in the erythrocyte count, hemoglobin, hematocrit, serum proteins and cholesterol and elevation of the sedimentation rate.⁴ It produces smooth muscle relaxation.⁵ The drug does not increase peripheral blood flow, nor does it produce peripheral dilation.⁶ Cardiac depression, increased cardiac output and decrease in the size of the heart have been reported.⁷

Potassium thiocyanate increases the flow from mucous glands.⁵ Goiter frequently follows its administration.⁴ Diuresis is often produced.⁸ Depression of metabolism of the liver occurs.^{6b}

In human beings the number and severity of toxic symptoms are roughly proportional to the serum thiocyanate level. With serum levels less than 12 mg. per hundred cubic centimeters, weakness, fatigue, depression, exhaustion, somnolence, apprehension, nervousness, nightmares, tinnitus, pruritus, dry skin, various dermatitides, nausea, vomiting, abdominal pain, diarrhea, anemia and goiter are commonly noted. With blood levels higher than 12 mg. per hundred cubic centimeters, these symptoms and other more serious effects, such as fever, loss of hair, angina, purpura, gastric hemorrhage, vertigo, twitching, convulsions, disorientation, confusion, slurred speech, hallucinations, unsteady gait, motor aphasia, paralysis of the lower extremities, exfoliative dermatitis, collapse, coma and death, have occurred.

The mechanism producing the hypotensive effect is not known. It parallels the serum thiocyanate level. The sedative action of the thiocyanate ion is insufficient to account for the fall in blood pressure, for the more efficient soporifics, such as the bromides, chloral and the barbiturates, fail to produce comparable results. The changes in blood composition, with the exception of the decreased cholesterol, are reproduced almost identically by repeated venesections.

Barker and Davis⁹ have demonstrated that a reduction in blood pressure is produced by thiocyanate administration in hypertensive Goldblatt dogs. This is evidence that its effect is not that of relieving arteriolar spasm in the kidney, for the Goldblatt clamp mechanically prevents an increase of blood flow to that organ. There is no evidence that the thiocyanates act as deactivators for the pressor substances described by Page. There is no evidence at present which suggests that its hypotensive action is due to breakdown products of the drug in vivo. It has been suggested that the hypotensive effect is a response to the ingestion of a protoplasmic poison.

REPORT OF CASES

The following cases, including 1 in which there was fatal poisoning, are reported to illustrate toxic effects of thiocyanate therapy.

CASE 1.—Mrs. H. L., a 48 year old white woman, first entered St. Joseph Hospital in December 1945, complaining of nervousness, malaise, intermittent "spells of numbness" involving the entire body and high blood pressure of many years' duration. Physical examination and laboratory, roentgenologic and electrocardiographic studies at that time failed to reveal any significant evidence of cardiac or renal disease. The mean systolic blood pressure during that period of hospitalization was 250 and the mean diastolic pressure 150 mm. of mercury.

This patient received thiocyanates for three months. The serum thiocyanate level was maintained between 8 and 15 mg. per hundred cubic centimeters. After attempts to produce a significant fall in blood pressure failed and severe occipital headaches developed, sympathectomy was advised. In April 1946, a thoracolumbar sympathectomy was performed.

The patient again received thiocyanates, until Feb. 7, 1947, when she reentered St. Joseph Hospital, complaining of extreme tiredness, dizziness, weakness and vomiting of two days' duration. The essential observations were confusion, disorientation, inability to give a coherent chronologic history and hesitant speech. The retinal vessels showed moderate nicking and a decrease in the auriculoventricular ratio. The systolic blood pressure was 260 and the diastolic pressure 114 mm. of mercury. Neurologic examination failed to demonstrate any abnormal changes other than the confusion previously noted. There was mild microcytic hypochromic anemia and a trace of albumin in the urine. The nonprotein nitrogen was 27 and the serum thiocyanate level 8.8 mg. per hundred cubic centimeters.

No treatment other than bed rest was given, and for ten days the patient's condition remained unchanged. Her blood pressure during that period varied from 230 systolic and 205 diastolic to 112 systolic and 110 diastolic (mm. of mercury). Although the thiocyanate therapy was stopped on admission, the serum thiocyanate level ten days later was 8 mg. per hundred cubic centimeters. After eighteen hospital days the mental symptoms had completely subsided and the patient's blood pressure was 235 systolic and 110 diastolic mm. of mercury. At this time the serum thiocyanate level was 5.5 mg. per hundred cubic centimeters.

CASE 2.—Mrs. C. D., a 64 year old white woman, entered St. Joseph Hospital on March 3, 1947, complaining of weakness, palpitation, slurred speech, inability to concentrate, mild disorientation and soreness of the mouth, tongue and lips of seven days' duration. Nine years previously, following a routine physical examination, she was told that she had high blood pressure. A 1,000 cc. venesection was done, and she was given 0.03 Gm. of phenobarbital and 0.3 Gm. of theobromine calcium salicylate three times daily. She had no symptoms for nine years. In February 1947, persistent occipital headaches developed, and she was given potassium thiocyanate, 0.3 Gm. three times daily. A serum thiocyanate level two weeks later was 8 mg. per hundred cubic centimeters. One week later the symptoms previously noted developed.

The patient had an unsteady gait and slurred speech and was mildly disoriented. She was irritable and apprehensive. The retinal vessels showed mild silvering and nicking. The systolic blood pressure was 190 and the diastolic pressure was 85 mm. of mercury. The apical impulse was in the fifth interspace, 13 cm. from the midsternal line. There was a soft mitral systolic murmur. The lungs, abdomen, back and extremities were normal. The results of laboratory examinations on admission were as follows: the nonprotein nitrogen was 22, blood sugar 96, vitamin C level 1 and serum thiocyanate level 22 mg. per hundred cubic centimeters. The sedimentation rate was 21 mm. per hour; phenolsulfonphthalein excretion was 67 per cent in one hour. Urinalysis showed a trace of albumin and a few leukocytes and hyaline casts. The electrocardiogram showed only minor changes.

The potassium thiocyanate therapy was stopped and the patient given bed rest. Eight days later the serum thiocyanate

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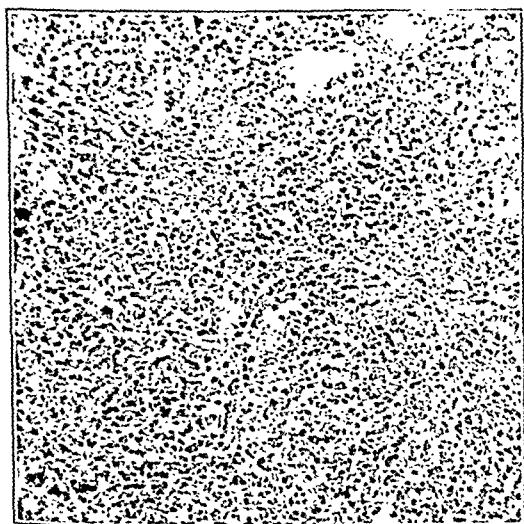
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level was 10 mg. per hundred cubic centimeters, and she had no complaints. Her blood pressure during this period varied from 188 systolic and 140 diastolic to 96 systolic and 70 diastolic (mm. of mercury). The patient was discharged fourteen days after admission, with a serum thiocyanate level of 8 mg. per hundred cubic centimeters.

CASE 3.—R. J., a 52 year old white man, entered St. Joseph Hospital Nov. 26, 1946. One month earlier hemiplegia had developed, and the patient was hospitalized in Indianapolis. A letter from his physician included the following data: the patient was pale and sweating; there was a partial paralysis of the left side, with hyperactive deep tendon reflexes; his systolic blood pressure was 260 and diastolic pressure 150 mm. of mercury. He was given 0.3 Gm. of phenobarbital four times daily, 20 cc. of 10 per cent magnesium sulfate intravenously daily, theobromine calcium salicylate, 0.3 Gm. three times daily, and potassium thiocyanate, 0.26 Gm. three times daily. In twenty days his systolic blood pressure had dropped to 170 and diastolic pressure to 92 mm. of mercury. The thiocyanate level increased from 2.8 mg. per hundred cubic centimeters on the second hospital day to 20.8 mg. on the twentieth hospital day.



Section of liver, showing central necrosis and peribulbar hepatitis (case 3).

When first observed in Chicago, on November 21, five days after leaving Indianapolis, he was drowsy, sweated profusely, salivated excessively and showed signs of auditory and visual hallucinations. He was acutely ill when admitted to St. Joseph Hospital November 26. The skin was icteric. There was generalized weeping crusted exfoliative dermatitis. The lips were dry and scaling. There were many small shotty cervical lymph nodes. The thyroid gland was diffusely enlarged. The systolic blood pressure was 130 and diastolic pressure 90 mm. of mercury. The heart was slightly enlarged to the left. The rhythm was regular. There were no murmurs. The lungs were clear. The abdomen was normal. The deep tendon reflexes were more active on the left than on the right. There were no pathologic reflexes. The left arm was paralyzed.

The laboratory reports on admission were as follows: red blood cells, 3,900,000, white blood cells 7,750, hemoglobin 12 Gm., sedimentation rate 25 mm. per hour, icterus index 60 units, nonprotein nitrogen 60, and serum thiocyanate level 25.3 mg. per hundred cubic centimeters. Culture from the cutaneous rash showed nonhemolytic *Staphylococcus albus*. The electrocardiogram showed a rate of 90 per minute, with the PR interval 0.14 seconds, QRS complexes 0.06 seconds, sinus rhythm, slurred QRS complexes in all limb leads and a low T wave in leads 1 and 3. The patient received fluids, penicillin, vitamins and sedation. On November 27 the temperature was 100.6 F. and then rose daily to 101 F. Soon signs of pneumonia developed in both lungs, and the patient died seven days after admission.

Necropsy showed generalized icterus, generalized exfoliative dermatitis, extensive necrosis of the liver, arteriolar nephrosclerosis, cerebral edema and an area of softening in the internal capsule.

The skin was thickened, rough, red and covered with flaky white scales, more apparent over the extensor surfaces of the extremities. There were scattered areas where the lesions were moist and weeping. Microscopic examination showed a focal subepithelial inflammatory cell infiltration, consisting of lymphocytes, plasma cells, leukocytes and eosinophils. The surface epithelium was absent in most areas.

The liver weighed 1,890 Gm. The capsule was smooth. On cut section the tissue was light yellow, mottled with tiny brown spots. Microscopic examination showed more than one half of each lobule to have decided lymphocytic infiltration around the portal radicles and decided necrosis of the parenchyma around the central veins.

The heart weighed 480 Gm. The left ventricle was hypertrophied. The coronary arteries were tortuous and contained many atheromatous plaques. The lungs showed vascular engorgement and focal areas of suppuration. The gallbladder, spleen, pancreas and adrenals were grossly normal. The kidneys showed extensive cloudy swelling and degeneration of the tubular epithelium. There was fibrosis of many glomerular tufts. The brain was edematous. There was an area of softening 2 by 1.5 by 0.5 cm. in the right internal capsule. A tissue assay for thiocyanate revealed 6 mg. per hundred cubic centimeters in the myocardium, 7.5 mg. per hundred cubic centimeters in the kidneys and 3.6 mg. per hundred cubic centimeters in the brain.

SUMMARY

Three patients from a series receiving thiocyanate for essential hypertension sustained unusual toxic effects. The maintenance of serum thiocyanate levels between 8 and 12 mg. per hundred cubic centimeters is generally considered to be an optimum range for a good hypotensive effect without toxicity. In case 1 there were severe toxic symptoms originating from the central nervous system, while the serum thiocyanate level was only 8.8 mg. per hundred cubic centimeters. This patient had failed to show a fall in blood pressure while taking thiocyanates either before or after thoracolumbar sympathectomy. Another danger is shown in the second patient. She presented a sudden rise in serum level from 8 to 22 mg. per hundred cubic centimeters in less than one week with a dose of 0.9 Gm. daily. Here a dose which previously had maintained a stable level suddenly rose to a height which was capable of producing damage. In the third patient with extensive nephrosclerosis there was spectacular fatal poisoning; this patient had received large doses of the drug. Death was due to extensive central necrosis of the liver, periportal hepatitis and extreme dermal exfoliation. This case, of course, was improperly managed. Frequent studies of the blood should have been made because of the large doses of the drug and because he had severe renal disease. In such a patient there is a narrow margin of safety between a therapeutic and toxic dose.

These studies suggest that the results of thiocyanate therapy are not uniformly good. The drug may or may not produce a fall in blood pressure in the patient with essential hypertension. There appears to be a narrow margin of safety between therapeutic and toxic levels in some patients. Moderate toxic symptoms are common even when blood levels are within a zone recommended as safe. In the fatal case the liver sustained extensive damage from an excessive dose. Thus it is seen that the thiocyanates, used in the treatment of a disease the mechanism of which is not well understood, are capable of some harm; indeed, it is possible that the hypotensive action is an effect produced by ingestion of a protoplasmic poison.

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the hope of preventing, or at least delaying, recurrence. Daily injections for such a long period of time, pain and localized reactions were the chief reasons for this failure. Accordingly, we outlined the following routine to which we hoped to adhere in each case: six injections per week, for a period of at least three months (and if possible for a total of ninety injections), to be followed by daily administration of enterogastrone tablets for an additional twelve months. Since it was reported that enterogastrone given orally, as well as parenterally, offers protection and resistance against the development of Mamm-Williamson ulcers,⁷ it was thought advisable to supplement the parenteral treatment with oral treatment.

3. A number of our patients were unable to visit the office for daily injections over a prolonged period of time. Accordingly, arrangements were made with a nurse or a member of the family to administer the drug. Twenty-one patients thus received enterogastrone injections in their homes. Of this number, in spite of the fact that all were instructed to receive injections daily (exclusive of Sundays), only 11 followed this routine. Seven of the remaining patients were treated five days per week and 3 only four days per week. Of the 21 patients who were treated in our office, all but 5 received daily injections exclusive of Sundays.

The parenteral enterogastrone extract was supplied in the form of enterogastrone hydrochloride, 200 mg. in weight, preserved as a "cake" in an ampule which represents a single "dose." This was prepared by The Upjohn Company in accordance with directions supplied by Dr. Ivy. The "cake" was dissolved either in 5 cc. of double distilled water or 5 cc. of isotonic sodium chloride solution and injected intramuscularly either in the buttocks or arms, as preferred by the patients. The enterogastrone tablets were prepared by Abbott Laboratories and were supplied in 0.5 Gm. tablets, and 14 tablets were administered daily in divided doses (7 Gm. per day). The patients receiving parenteral therapy at the office were seen by one of us daily; those who were treated in their homes were interviewed once a week. During the period of oral therapy the patients reported at regular intervals for interview and examination.

IMMEDIATE RESULTS

Table 1 summarizes the results obtained among the patients treated with six injections per week, five injections per week and four injections per week, as well as the results obtained among the patients treated in the

TABLE 1.—Parenteral Enterogastrone Therapy;
Immediate Result

No. of Injections per Week	No. of Patients	Average Injections	No. of Patients Who Became Symptom Free	No. of Patients with Moderate Improvement	No. of Patients Without Improvement
6.....	27	81	14 (52%)	3 (11%)	10 (37%)
5.....	10	80	8 (80%)	1 (10%)	1 (10%)
4.....	5	62	1 (20%)	0 (0%)	4 (80%)
Total.....	42	79	23 (55%)	4 (9%)	15 (36%)
Patients treated at office.....	21	67	14 (67%)	2 (9%)	5 (24%)
Patients treated at home.....	21	91	9 (43%)	2 (9%)	10 (48%)
Total.....	42	79	23 (55%)	4 (9%)	15 (36%)

office (by one of us) and the patients treated in their homes (by a nurse or a member of the family). It will be noted that:

1. Of the 27 patients who were treated parenterally six times a week (average: eighty-one injections), only 14, or 52 per cent, became symptom free and 3, or 11 per cent, were moderately improved. Ten of the patients (37 per cent) failed to obtain any symptomatic improvement.

2. Of the 10 patients who were treated five times a week (average: eighty injections) 8 became symptom free; of the 5 patients who received four injections weekly (average: sixty-two injections) only 1 was improved.

3. In the group as a whole, of the 42 patients treated parenterally only 23, or 55 per cent, obtained symptomatic relief during the three month period of enterogastrone therapy.

TABLE 2.—Relapses Within One Year from Institution of Enterogastrone Therapy

Number of patients who became symptom free during parenteral therapy.....	23
(1) Number of patients with recurrence during the first three months of treatment and while still receiving injections	7 (30.4%)
(2) Number of patients who had recurrence three to six months after the start of enterogastrone therapy and while still receiving enterogastrone orally	3 (13.0%)
(3) Number of patients who had recurrence six to twelve months after the start of enterogastrone therapy	6 (26.1%)
(4) Total relapses within one year from the start of enterogastrone therapy	16 (70.0%)

4. Hemorrhage developed in 3 patients while they were regularly receiving injections with enterogastrone (after ninety, ninety-eight and one hundred and fifteen injections). They were hospitalized and treated with the usual conservative regimen without further parenteral therapy.

5. In 2 patients the pain became intractable during treatment (after forty-five and sixty-nine injections), and they were subjected to subtotal gastric resection.

6. Of the 5 patients with hemorrhage and intractable pain, 4 received six injections weekly and 1 was treated five times weekly.

7. Twenty-one patients were treated by one of us at the office, and a similar number of patients were given injections by a nurse or a member of the family in their homes. It will be noted that of the patients treated in the office (and given injections by a physician) only 24 per cent of the patients failed to experience any improvement in symptoms, while of the patients given injections in their homes (by a nurse or a member of the family) 48 per cent failed to show any symptomatic improvement during the three month period of enterogastrone therapy (average: ninety-one injections).

It is important to stress that during the first three months of treatment, our therapeutic regimen was in no way different from that followed by Greengard and his associates.¹

RELAPSES WITHIN ONE YEAR FROM BEGINNING OF ENTEROGASTRONE THERAPY

Continuation of enterogastrone therapy (after the three month period) in the 19 patients who failed to obtain symptom-free intervals did not seem warranted even had the patients agreed to further trial. Accordingly, our interest was focused on the 23 patients who had symptom-free intervals during the parenteral administration of this product. These 23 patients were asked to continue with the liberal modified diet for ulcer and, in addition, to take 14 enterogastrone tablets daily. In this respect, our series differed from that of Greengard and his co-workers¹ who continued injections for three to nine months longer. A summary of

the results under our regimen in these 23 patients is presented in table 2. It will be noted that:

1. Seven of the 23 patients, or 30 per cent, had relapses during the first three months of treatment and while still receiving injections. (Three of these patients were given injections six times weekly and 4 were

TABLE 3.—Comparative Immediate Results; Enterogastrone Therapy Versus Other Medical Regimens, in Patients with Chronic Duodenal Ulcer

Series	Treatment	Number of Patients Treated	Number of Ulcer Attacks Treated	Percentage Symptom Free (on Moderate Basis of Ulcer Attacks)	Percentage Improvement	Percentage No Improvement
1	Diet alkali regimen, hospital bed rest.....	94	141	84	7	9
2	Diet alkali regimen, ambulatory I*.....	260	682	79	9	12
3	Diet alkali regimen, ambulatory II*.....	55	55	55	20	27
4	Vaccine (parenteral).....	44	68	66	12	22
5	Histidine (parenteral)....	43	43	54	16	28
6	Emetine (parenteral)....	38	43	58	23	10
7	Distilled water (parenteral).....	22	22	50	27	14
8	"Anthelone" (parenteral).....	63	83	71	18	11
9	Enterogastrone (parenteral).....	42	42	55	0	26

* Average class of patients, private and clinic, with acute or chronic ulcers.

† Mostly patients with chronic ulcers, analogous to groups 4 through 9.

given injections five times weekly.) One patient had a recurrence within two months after parenteral therapy was instituted (six injections a week; office treatment) and continued until ninety injections had been given, after which he took tablets orally for an additional two months. He refused further treatment after a second recurrence. The remaining six patients had attacks within three months after injections had been started (3 had six injections per week, and 3 had five injections per week). Two of these 6 patients continued with treatment until one hundred and fifteen and ninety-eight injections, respectively, had been given; they then took tablets for one and two months, respectively, but failed to return for additional tablets or further observation.

2. There was recurrence in 3 patients within three to six months after enterogastrone therapy had been instituted and 6 patients within six to twelve months. All of these patients received six injections a week (an average total of seventy-one injections) and continued with oral administration of enterogastrone from one to thirteen months, but had recurrence during treatment.

3. In the 23 symptom-free patients as a group, 16 (70 per cent) had recurrences within one year after the start of enterogastrone therapy. Each of 12 of the patients had six injections a week, and 9 had at least ninety injections. Only 7 patients (30 per cent) were still symptom free one year after treatment was begun. Three of these 7 patients each received six injections a week (average: eighty injections); 3 received five injections a week (average: ninety-seven injections), and 1 received four injections a week, a total of only thirty-eight injections.

COMPARATIVE RESULTS

Previously, one of us (D. J. S.) employed other products parenterally for patients with chronic duodenal ulcer, i. e., vaccine, histidine, emetine, "anthe-

lone" and distilled water injections. In addition three other series of patients with duodenal ulcers, treated with the usual diet-alkali-antispasmodic regimens (ambulatory and hospital bed rest); were analyzed for the effect of these regimens on symptoms and relapses. Detailed data on the results of treatment in these eight different series of patients have been reported.⁸ It must be stated that the patients treated with enterogastrone (the present and ninth series) were treated more frequently and over a much longer period of time.

Tables 3 and 4 present the comparative results. It will be noted that enterogastrone therapy does not present superior results over the other regimens, either in its immediate effect on symptoms or in its remote effect on "immunizing" patients against recurrence. It will also be noted that the lowest percentage of relapses within one year occurred among those patients who followed a dietary regimen.

"IMMUNITY" AGAINST RECURRENT SYMPTOMS

It has been definitely demonstrated by Ivy and his associates that in Mann-Williamson dogs enterogastrone therapy prevents, or at least delays, recurrent ulceration. This so-called "immunity" against recurrent ulceration continues even after enterogastrone therapy is discontinued, provided, however, that enterogastrone is administered for a period of at least three months.

His co-workers¹ have applied this to man. They reported that therapeutic trial on 58 patients (and 43 Mann-Williamson dogs) "has demonstrated the probability that the material [enterogastrone] is effective in preventing recurrence during the period of its administration, and for a length of time thereafter of a duration as yet undetermined."

Our clinical results are not in agreement with this opinion. Of 33 patients who have had a full three month course of parenteral therapy (an average total of eighty-nine injections), 13 patients continued to

TABLE 4.—Comparative Relapses; Enterogastrone Therapy Versus Other Medical Regimens, in Patients with Chronic Duodenal Ulcer

Series	Treatment	Number of Ulcer Attacks Followed Up	Percentage of Relapses Within Six Months	Percentage of Relapses One Year
1	Diet alkali regimen, hospital bed rest	113	39	50
2	Diet alkali regimen, ambulatory I...	463	40	57
3	Diet alkali regimen, ambulatory II...	26	55	54
4	Vaccine (parenteral).....	37	62	84
5	Histidine (parenteral).....	21	86	90
6	Emetine (parenteral).....	23	57	57
7	Distilled water (parenteral).....	13	67	92
8	"Anthelone" (parenteral).....	44	38	64
9	Enterogastrone (parenteral).....	23	43	70

* Average class of patients, private and clinic, with acute or chronic ulcers.

† Mostly patients with chronic ulcers, analogous to groups 4 through 9.

have symptoms at the end of the three month period; 2 were moderately improved, and 18 were symptom free. Of the 18 patients who were symptom free at the end of the three month therapeutic regimen, 13 had

8. Sandweiss, D. J., and Meyers, S. G.: Treatment of Peptic Ulcer with Bacterial Vaccine (Foreign Proteins), *Am. J. Digest. Dis. & Nutrition* 1: 338-341 (July) 1934. Sandweiss, D. J.: Treatment of Peptic Ulcer with Histidine Monohydrochloride, *M. A.* 100: 1452-1459 (April 25) 1936; Dietetic, Parenteral and Surgical Treatment in 700-705 (Feb. 25) 1937. Sandweiss, D. J., and Sullivan, M. H. F.; Saltzstein, H. C., and Farberman, A. A.: The Effect of Urine Extracts on Peptic Ulcer, *Am. J. Digest. Dis.* 8: 371-382 (Oct.) 1941.

recurrence of symptoms within one year (2 of these had hemorrhages during the year) and in 1 a perforation developed fourteen months after the institution of treatment. Only 4th of the 33 patients (12 per cent) were still symptom free approximately one year after completing the three month course of parenteral therapy.

It should be stressed that 10 of the 14 patients who had subsequent recurrences had had the added advantage of enterogastrone given orally for many months after parenteral treatment with enterogastrone was discontinued and that the symptoms recurred while these patients were still receiving enterogastrone orally.

It should also be noted that, since three months of treatment have been recommended to establish "immunity," this analysis includes only the results obtained after three or more months of treatment. In these 33 patients we have accordingly disregarded symptoms or recurrences during the first three months.

STUDIES OF SECRETION

Studies of gastric secretion were made on 9 patients before and after enterogastrone therapy, using 300 cc. of 3 per cent alcohol as a test meal. In 4 patients there was a moderate reduction in free hydrochloric acid concentration; in 3 patients there was no change, and in 2 there was a moderate elevation of free hydrochloric acid concentration.

Pollard and his associates⁹ failed to note any change in the fasting volume of gastric secretion or output of hydrochloric acid following daily oral or parenteral administration of enterogastrone for a period up to eleven months. They also failed to note any change after single intramuscular injections of 200 to 800 mg. of enterogastrone.

Kirsner's studies¹⁰ on patients with peptic ulcer are of interest. In a personal communication to us he stated: (1) Nocturnal and twenty-four hour gastric secretion "may decrease" in human beings after the intramuscular injection of 1,000 to 3,000 mg. of an enterogastrone concentrate. The inhibition is variable in degree and not consistently related to the dosage. (2) The secretion of acid "may increase" during the administration of enterogastrone and, also, twenty-four and forty-eight hours later. The significance of these results will be commented on later.

ROENTGENOLOGIC STUDIES

We did not study our patients roentgenologically after enterogastrone therapy. However, of 17 patients so studied by Pollard and his co-workers,⁹ the roentgenographic appearance "was unchanged in 8 cases, improved in 6 and definitely worse in 3."

SIDE EFFECTS

Our first 2 patients experienced generalized urticaria after each of the first two injections. We subsequently prevented urticaria by injecting, at first, smaller amounts of enterogastrone in patients observed to be sensitive to preliminary intradermal tests. A number of the patients presented redness, soreness and induration, which at times extended over an area of 5 to

10 inches (about 13 to 25 cm.) in diameter. These rarely lasted longer than forty-eight to seventy-two hours. The injections were painful to most of our patients, even to those who did not have local reactions. Several complained that they could not work or drive a car for two to three hours after each treatment. A few patients wondered about residual slightly tender "bumps." These were small round indurated areas, apparently deep in the muscles into which the injections had been given, which as a rule completely disappeared within a week or two after each treatment. None of our patients experienced generalized reactions, such as chills, fever or influenza-like symptoms. These side effects were in no way related to clinical end results.

COMMENT

The experimental data reported by Hands and his co-workers⁴ and Ivy and his associates¹¹ indicate that treatment with enterogastrone extracts have a prophylactic, curative and "immunizing" effect on Mann-Williamson ulcers. However, in the light of our disappointing clinical experience, one might well ask whether encouraging experimental results on Mann-Williamson dogs are always applicable to ulcers in human beings.

The Mann-Williamson ulcers, according to Mann, Ivy and others (as well as in our own experience), have both the gross and microscopic characteristics of those seen in peptic ulcer in human beings. For this reason, physiologists commonly use Mann-Williamson dogs to test the therapeutic efficacy of various regimens for ulcers. However, there are definite fundamental differences between the Mann-Williamson ulcers and those seen in human beings. An ulcer hardly ever develops in the dog spontaneously. Also, in the Mann-Williamson dog the ulcer develops at the jejunum; this ulcer develops only following a surgical procedure, i. e., a gastrojejunostomy plus surgical duodenal drainage.¹² By this surgical procedure, the jejunum is deprived of all pancreatic enzyme (trypsinogen, amylase and lipase), bile (bile salts, acid and pigments) and the duodenal secretions. In addition, there is a disturbance in the acid-alkali relationship in the jejunum of the Mann-Williamson dog as compared with the normal jejunum. In short, there is a total disturbance of all biochemical processes of digestion. As a result, as a rule, nutritional disturbances develop in the dog. The untreated animal invariably dies within five months following this operation, and in our experience approximately 75 per cent of the animals die of peritonitis following perforation of the ulcer.

We thus question whether duodenal ulcer in human beings is similar to the ulcer observed in Mann-Williamson dogs. Even the jejunal ulcer following a gastroenterostomy is not analogous to the Mann-Williamson ulcer, for when gastroenterostomy is performed in a human being the duodenum, with its contents, is never "detoured" to the terminal aspect of the ileum.

It might be stressed that if any agent promotes healing and prevents recurrences of Mann-Williamson ulcers, the same agent could be expected to produce similar results in patients in whom the processes of digestion and nutrition are not so much distorted as in

8a. One of these 4 patients had a hemorrhage recently (August 1948), about fourteen months after the institution of enterogastrone therapy. He had two hundred injections (six per week) and continued with enterogastrone orally. The hemorrhage occurred while the patient was still taking enterogastrone.

9. Pollard, A. M.; Block, M.; Bachrach, W. H., and Mason, J.: Studies on the Treatment of Peptic Ulcer with Enterogastrone, to be published.

10. Kirsner, J. B.: Personal communication to the authors, Oct. 15, 1947.

11. Greengard, Atkinson, Grossman and Ivy.¹ Ivy.⁶

12. In the Mann-Williamson operation the pylorus is anastomosed to the jejunum 15 to 20 cm. beyond the ligament of Treitz, and the duodenum and its entire contents is "detoured" to the terminal aspect of the ileum about 25 cm. proximal to the cecum.

the Mann-Williamson dog. In this respect, Ivy and his associates, in conducting an experimental test with enterogastrone as a possible medicament for patients, have made a distinct contribution, especially in the light of their encouraging clinical data. It is possible that our conflicting clinical results might be explained by variations in potency between the different lots of enterogastrone extracts. If so, the present method of preparing enterogastrone and the present method of assaying the product for potency need immediate reevaluation if enterogastrone is to be used therapeutically on patients.

Enterogastrone connotes the hormone derived from intestinal mucosa which suppresses gastric secretion and acidity. However, it appears, from the recent reports by Ivy¹³ and Greengard and his associates,¹ that enterogastrone concentrates contain not only a gastric secretory depressant factor (an antiacid factor) but also one which increases the resistance of the mucosa to ulceration (an antiulcer factor), which they consider probably responsible for the beneficial effect on Mann-Williamson ulcers. Greengard and his co-workers¹ said:

Such an action [gastric secretory depressant] completely fails to account for the findings that the duration of protection far outlasts the course of injections. . . . Support of this view is lent by the apparent protective effect in the dog of a crude acid extract of the intestinal mucosa when given by mouth in adequate doses; the secretory-inhibitor effect of enterogastrone is not elicitable by its oral administration.

Ivy¹³ also explained the protection provided by enterogastrone as due to antiulcer activity rather than antiacid activity, i. e., to an increased resistance of the mucosa to ulceration similar to that provided by "anthelone." Yet, the enterogastrone presently available and employed clinically is assayed only for its gastric secretory depressant potency. If enterogastrone produces a beneficial effect on Mann-Williamson dogs by its antiulcer activity (rather than by its antiacid activity) and, furthermore, since enterogastrone is employed clinically because it produces increased resistance of the mucosa against ulceration (without inhibiting gastric secretion in the patients, as was shown previously and suggested by Greengard and his co-workers) the product should then be assayed for antiulcer activity instead of for antiacid activity. This, unfortunately, is impossible at present, because a reliable method of assaying antiulcer activity quantitatively is as yet not available. In other words, the content of the active antiulcer ("anthelone") principle in enterogastrone is unknown.

As previously stated, Kirsner¹⁰ observed that nocturnal and twenty-four hour gastric secretion "may decrease" after the intramuscular injection of 1,000 to 3,000 mg. of enterogastrone concentrate and that the secretion of acid "may increase" during the administration of "enterogastrone" and for twenty-four and forty-eight hours. . . . gastric secretory stimulants may be extracted from practically all tissues of the body¹⁵ as well as from the mucosa of other parts of the gastrointestinal tract (in addition to that of the pyloric mucosa),¹⁶ is it possible that the enterogastrone

concentrates have, in addition to a gastric secretory depressant, a gastric secretory stimulant? Furthermore, since enterogastrone has as yet not been isolated or prepared in pure form, can it be said that it is free not only from gastrin or histamine but also from cholecystokinin, secretin, enterocrinin, villikinin or duodenin (the other hormones or hormone-like substances present in the mucosa of the small bowel)? It appears to us that not only do we not know how much of the active principle we are injecting, but also, we do not know what other hormones or hormone-like substances we are administering when we inject enterogastrone concentrates.

On the basis of our experience, enterogastrone as commercially available at present is not to be considered for a routine therapeutic regimen in peptic ulcer. On the basis of Ivy's laboratory (animal) and clinical observations, further intensive studies on the physiologic and biochemical aspects of the small bowel concentrates are warranted in an effort to produce a better product.

SUMMARY

1. Enterogastrone was administered parenterally to 42 patients with proved chronic duodenal ulcers. The injections were given six, five or four times weekly during a period of three months (an average total of seventy-nine injections). The immediate clinical results were disappointing, since only 55 per cent of the patients had symptom-free intervals.

2. Twenty-three patients (55 per cent) had symptom-free intervals during the three month period of parenteral enterogastrone therapy. After the course of parenteral therapy was completed, the 23 patients were given enterogastrone tablets orally. Sixteen, or 70 per cent, of these patients presented symptoms of recurrent ulcer within one year after the institution of parenteral therapy.

3. Our clinical results with parenterally administered enterogastrone were compared with those previously obtained by one of us with the diet-alkali regimens and with other parenterally administered products (vaccine, histidine, emetine, "anthelone" and distilled water injections). Our comparative results indicate that: (a) treatment with enterogastrone failed to produce more satisfactory results than the other therapeutic regimens, either in its immediate effect on symptoms or in its remote effect on recurrent attacks within one year, and (b) the lowest percentage of relapses within one year occurred among those patients who followed the usual conservative dietary regimen.

4. Thirty-three of our patients had a full three month course of parenteral enterogastrone therapy (an average total of eighty-nine injections). Only 4 of the patients (12 per cent) were still symptom free fourteen months after completing the three month regimen. The remaining patients had either not had a symptom-free interval at the end of the three month period or had subsequent recurrences if they became symptom free. We are thus of the opinion that the enterogastrone we employed, when administered parenterally during a three month period (even if followed by oral administration of enterogastrone), does not produce "immunity" against recurrent ulcer.

5. For the present we are discontinuing the use of enterogastrone clinically. It is our opinion that: (a) enterogastrone as commercially available at present is not to be considered a routine therapeutic medica-

13. Ivy, A. C.: A Potential Physiological Contribution to the Prevention of "Peptic" Ulcer in Man, *Federation Proc.* 4: 222-225 (Sept.) 1945.

14. Deleted.

15. Ivy, A. C.: Internal Secretions of the Gastrointestinal Tract in Glandular Physiology and Therapy, Chicago, American Medical Association, 1942, p. 525.

16. Babkin, B. P.: *Secretory Mechanism of the Digestive Glands*, New York, Paul B. Hoeber, Inc., 1944, p. 421.

ment for peptic ulcer, and (b) further intensive studies on the physiologic and biochemical aspects of enterogastrone concentrates are essential to produce a better product.

ADDENDUM

We have recently treated two series of Mann-Williamson dogs with enterogastrone, using the hospital stock animal diet, and we compared the results with our control (untreated) series. Nine dogs which received daily injections of 200 mg. of enterogastrone parenterally (The Upjohn Company) showed no benefit.¹⁷ Fourteen dogs given 8 tablets (4 Gm.) of enterogastrone (Abbott Laboratories) daily by mouth showed some benefit.¹⁸ Perhaps the commercial preparations we used were not as potent as those previously used by Ivy and his associates.

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TREATMENT OF SCABIES

Report of One Hundred Patients Treated with
Hexachlorocyclohexane in a Vanishing
Cream Base

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The introduction of a new drug for the treatment of a specific disease carries with it two main questions: Is it effective, and is it safe? The authors have tested a preparation of hexachlorocyclohexane in a vanishing cream base¹ in 100 consecutive cases of scabies. All the patients were cured with from one to three applications; no irritation or discomfort from the remedy were noted, and no sensitivity to the drug or the vehicle, either primary or secondary, was elicited. The preparation seems to us to be the most promising yet advanced for the cure of a disease which is widespread in all walks of life and constantly increasing in incidence.

Scabies constitutes one of the most frequently encountered diseases in dermatologic clinics, its incidence varying with climate, habits of personal hygiene and degree of intimate contact. Scabies affects all ages, all races and all strata of society, although it occurs less often and usually in a modified form in persons of clean habits. It is seen in office practice as well as in the clinic.

INCIDENCE

After World War I the prevalence of scabies increased steadily in Great Britain until, during World War II, it assumed epidemic proportions. In this country waves of increase have followed the Civil War, the period of mass immigration in the early 1900's and World War I. All indications are that another upsurge is now taking place.

In the United States Army, during the recent war, scabies was one of the principal causes of time lost through cutaneous disease. The incidence varied considerably with locale, but the over-all picture showed scabies to be fifth in frequency among disorders of the

skin. In private dermatologic practice, it is encountered in from 5 to 12 per cent of patients, according to several observers, and estimates for the population in general range as high as 18 per cent in some areas.

Unfortunately, recognition of scabies may not always be easy. Sometimes the diagnosis is so obvious that the patient presents himself with the statement that he has "the itch." Other cases can puzzle even the experienced specialist. Kaposi termed scabies "a chameleonic eruption which presents one of the most difficult diagnoses in dermatology." Regarding its widespread occurrence in the Army, Pillsbury, Sulzberger and Livingood² stated, "In connection with this disease, the deficiencies of the American medical educational system in respect to dermatology were strikingly apparent; most medical officers had no concept whatever of the chief diagnostic features of scabies, and little knowledge of its treatment." Therefore, a brief review of the diagnostic points may be in order.

The outstanding symptom is itching, almost always worse at night and when the patient is warm. The eruption is made up of papules, vesicles, linear scratch marks, pustules and "burrows," which are often excoriated by scratching. The distribution is rather characteristic; in typical cases lesions may be seen in the interdigital spaces of the hands, or flexor surfaces of the wrists, on the inner and outer aspects of the elbows, in the axillas, around the umbilicus, on the buttocks and inner aspects of the thighs, on the penis and scrotum in men and around the nipples in women. The eruption may become generalized, although the face and scalp usually remain free. In young children and in bedridden patients, the palms and soles and even the face are frequently affected.

In many cases the severe itching induces scratching, which frequently results in secondary infection. In some persons the eczematous or impetiginous manifestations may completely mask the original characteristics.

The pathognomonic lesion of scabies is the burrow, which is not often recognizable in adults, but may usually be located in children. It appears as a sinuous threadlike line, along the course of which may be seen one or more small vesicles. At the closed end of the burrow the acarid may sometimes be seen, particularly with the aid of a lens, as a grayish dot.

The distribution of burrows and acari does not correspond proportionately to that of the general eruption; the latter has been considered by some authorities to be due largely to sensitization,³ rather than to the actual presence of the mites. Heilesen⁴ stated: "Nobody has yet been able to give a satisfactory explanation of the pronounced tendency of the mites to gather on the sites of election. The investigations of the burrowing of the mite seem, however, to indicate that it prefers to bore into furrowed and folded skin regions, and has difficulty in burrowing where the skin is quite smooth."

DEMONSTRATION OF THE PARASITE

We wished to demonstrate the *Acarus scabiei* whenever possible in this series and were able to do so in the large majority of cases. Secondary infection or extensive excoriations occasionally made its recovery dif-

17. Saltzstein, H. C.; Sandweiss, D. J.; Hill, E. J., and Hammer, J.: Results in the Treatment of 374 Mann-Williamson Dogs, *Gastroenterology*, to be published.

18. Saltzstein, H. C.; Sandweiss, D. J.; Hammer, J.; Hill, E. J., and Vandenberg, H. J.: Effect of Enterogastrone on Mann-Williamson Ulcers in Dogs. *Arch. Surg.* 55: 125 (Aug.) 1947.

From the Department of Dermatology, College of Physicians and Surgeons, Columbia University, and the Vanderbilt Clinic.

1. "Kwell," supplied by Commercial Solvents Corporation.

2. Pillsbury, D. M.; Sulzberger, M. B., and Livingood, C. S.: *Manual of Dermatology*, Philadelphia, W. B. Saunders Company, 1942.

3. Mellanby, K.: *Scabies*, London, Oxford University Press, 1943; *The Development of Symptoms, Parasitic Infection and Immunity in Human Scabies*, *Parasitology* 35: 197, 1944; *The Skin Reactions in Human Scabies*, *ibid.* 35: 201, 1944.

4. Heilesen, B.: Studies on *Acarus Scabiei* and Scabies, *Acta dermat.-venereol.* (Suppl. 14) 26: 1, 1946.

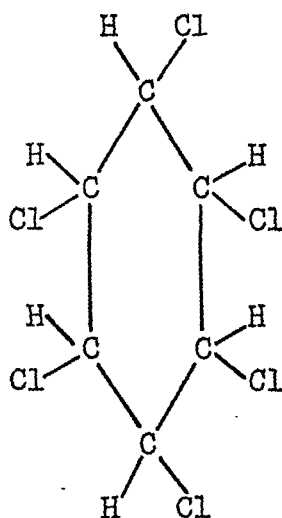
difficult or impossible. Regardless of the intensity of the eruption elsewhere, we have been most successful in obtaining specimens from the fingers and hands and have seldom found it necessary to look further. The frequent statement that 10 per cent of the mites will be found on the volar aspect of the wrists has not been borne out by our experience, as it was recovered from that location in only 2 instances.

The most satisfactory method in our hands has been with the use of a sharp Hagedorn needle. The point is inserted under the epidermis at the beginning of the burrow, which is laid open along its entire length. (This is usually painless if properly done, as the burrow is confined to the horny layer.) By teasing the blind end, the acarid may frequently be made to cling to the needle point and appears as a minute oval grayish speck. If this is placed on a glass slide and exposed to warmth, its activity will identify it to the naked eye. The microscope will be needed to reveal greater detail. If the acarid does not cling to the needle, the burrow is scraped lengthwise with the edge of the needle, and the resulting debris placed on a slide. A drop of

10 per cent sodium hydroxide clarifies the material, and when a cover slip is gently pressed into place, the inanimate mite, larva, ova or detritus will usually be clearly revealed under the microscope. When typical burrows cannot be observed, the vesicles may be similarly examined.

OLDER REMEDIES

Sulfur as a local application has long been known to be an effective scabicide and was used for many years before the acarid was first demonstrated by Bonomo and Cestoni in 1687 as causing the disease. Other preparations used have included peruvian balsam, tar,



Chemical structure of hexachlorocyclohexane.

betanaphthol and cresol. None of these, however, proved as effective, or stood the test of time, as did sulfur. All the older preparations were messy to apply, and many were malodorous and irritating. The treatments consisted of at least two steps: a bath with thorough scrubbing, followed by complete and vigorous application of the medicament to the entire cutaneous surface below the head, often as many as four applications being recommended. Dermatitis as a result of treatment has been a complication in as high as 25 per cent of cases.

In recent years, newer remedial agents, such as benzyl benzoate emulsions and the dichlorodiphenyltrichloroethane (DDT)-benzocaine-benzyl benzoate formula, have done much to remove these objections, but meticulous application has been necessary; burning on contact has been a frequent complaint, and there have still been many instances of irritation or sensitivity. Experience with benzyl benzoate emulsions in the Canadian Army led to the belief that it produced a sensitivity to wool,⁵

the pathogenesis of which is not as yet clear. It appears, therefore, that a new highly effective scabicide, virtually nontoxic and nonirritant, which is simple and pleasant to apply, may be gratefully received.

HEXACHLOROCYCLOHEXANE—A POTENT NEW INSECTICIDE

The chemical 1,2,3,4,5,6-hexachlorocyclohexane, with the chemical formula $C_6H_6Cl_6$, was first discovered to be a promising insecticide early in 1942 by Thomas (Slade⁶) in experiments to control the turnip flea beetle in England. It is sometimes incorrectly called benzene hexachloride; this is an entirely different organic compound, with the formula C_6Cl_6 . It has also been known as "666," but this is an undesirable term for it has also been used as a designation for a commercial antimalarial preparation.

The gamma isomer of 1,2,3,4,5,6-hexachlorocyclohexane has been observed to be the most effective and, in addition, is free from the odor of chlorine. It has been extensively tested as an insecticide by the Department of Agriculture, the Army Service Forces, the Kettering Institute and other agencies and has been demonstrated to be toxic to a large number of insects as a contact agent, a stomach poison or a fumigant,⁶ apparently acting on the central nervous system.

From the medical point of view, the drug is important in the control of chiggers, ticks, fleas, cockroaches, bedbugs and pediculi capitis, corporis and pubis, as well as of the *Acarus scabiei*. It was observed by Army authorities to be outstanding as a miticide, both by impregnation of uniforms and in field fumigation.⁷

EFFECT ON HUMAN BEINGS AND OTHER VERTEBRATE ANIMALS

Report no. 56 of the Medical Division, Chemical Warfare Service, dated Sept. 26, 1945,⁷ stated, in reference to the crude hexachlorocyclohexane: "To date, no cases of poisoning or toxic symptoms have been reported for man except headaches and irritation to the eyes, and if inhaled, to the nose and pharynx. . . . If large quantities are used, a face mask is suggested. . . . There are no reported cases of its having been handled sufficiently long to produce symptoms from absorption through the skin."

Tests of the gamma isomer in rabbits, guinea pigs, rats and mice, by the same authorities, indicated that this form of the drug is not readily absorbed through the skin or when taken by mouth. Dr. G. R. Cameron, Professor of Morbid Anatomy at University College Hospital Medical School in the University of London⁸ commented: "Unpublished work by Mr. F. Burgess and myself suggests that this compound is of relatively low toxicity when applied to the skin or administered orally in single doses. Fairly large doses given repeatedly are tolerated." He stated further: "We have not heard of any cases of intoxication in human beings."

Tests of the particular preparation used in the series which forms the basis for this report were previously

6. Slade, R. E.: The Gamma Isomer of Hexachlorocyclohexane (Gammexane) (The Hurter Memorial Lecture), *Chem. & Indust.* 64: 40 and 314, 1945.

7. Jenkins, D. W.: A Review of the Insecticide Hexachlorocyclohexane ("666"), Medical Division Report no. 56, Army Service Forces, Chemical Warfare Service, Sept. 26, 1946.

8. Cameron, G. R.: Risks to Man and Animals from the Use of 2,2-bis (p-Chlorophenyl), 1,1,1-Trichloroethane (DDT) with a note on the Toxicology of Gamma Benzene Hexachloride (666 Gammexane), *Brit. M. Bull.* 3: 233, 1945.

5. Shane, S. J.: Benzyl Benzoate and Wool Dermatitis, *Canad. M. A. J.* 54: 39, 1946.

carried out in approximately 800 human subjects in various institutions, with no evidence of toxicity or of cumulative effect to date. In five hundred patch tests, with ten, fifteen or more repeat tests, no instances of sensitivity has occurred.⁹ Our report concerns its trial in 100 cases of scabies.

GAMMA ISOMER OF HEXACHLOROCYCLOHEXANE IN THE TREATMENT OF SCABIES

The preparation used is the gamma isomer of 1, 2, 3, 4, 5, 6-hexachlorocyclohexane 1 per cent in a vanishing cream base. It is white in color and has a faint, not unpleasant, odor.

An unselected series of patients with scabies were treated with this ointment. Thirteen of these were ward patients at City Hospital¹⁰; 10 were seen in office practice, and the remaining 77 were treated in the Vanderbilt Clinic. Men, women and children, of all ages and several races, were included in the group. The eruption ranged from mild to severe with extensive secondary infection. We included only cases with characteristic lesions, confirmed in most instances by demonstration of the itch mite.

PROCEDURE FOLLOWED

The following plan of treatment was used:

1. Physical inspection was carefully made, including examination for *Acarus scabiei*.
2. Without preliminary bathing, a thin film of the cream was rubbed into the entire cutaneous surface of infants and from the neck to the sole of the foot in adults. The average adult required 15 to 25 Gm. per treatment.
3. The patient was requested to refrain from bathing or washing the hands for twenty-four hours.
4. After the bath, he was directed to use fresh underwear and night clothes and to change the bed linen, seeing that all were well laundered before reuse.
5. The patient was reexamined at the end of one week. (This allows ample time for hatching of any ova that might still be viable).
6. Other members of the family were to be brought in at the earliest possible moment for examination, and treatment if required.

Our patients were observed weekly until the eruption had entirely disappeared. If there were signs of activity or any considerable pruritus, the treatment was repeated. It was realized that pruritus was not an accurate indication of uncontrolled infestation, as other factors could well be involved. A habit pattern might have become established or acarophobia have intervened. However, the rapidity with which itching was controlled in most cases led the authors to use this symptom as a retreatment index.

RESULTS

Results in the 100 cases are shown in the table. Complete relief from pruritus within twenty-four to forty-eight hours was reported by about half the patients, and many observed that itching ceased within two to three hours. Pronounced clinical improvement was seen in all cases after one application. Sixty-one, or nearly two thirds of those under observation, showed no signs of activity after a single treatment. Thirty-six were given two treatments, and 3 patients received three. All were cured. In no case could the acarus be demonstrated after the first application of the cream.

Irritation was not observed in a single instance. One young child made a questionable complaint of burning when the ointment was rubbed in, but otherwise there were no evidences of immediate or subsequent reaction.

Four patients when first seen had advanced eczematization as a result of constant scratching. These were treated with bland ointments for one to two weeks after completion of treatment for scabies.

Secondary infection, when present, was treated with antibacterial ointments. In some instances these were used before the scabicide cream was applied and in others after, and the results were equally satisfactory. In the few cases in which the hexachlorocyclohexane alone was used in the presence of mild secondary infection, control of the primary dermatosis and its accompanying itching and excoriation allowed prompt healing of the superimposed dermatitis without recourse to other measures. As in the uncomplicated cases, application of the cream caused no irritation or discomfort. All patients found the preparation cosmetically acceptable, nongreasy and nonstaining to the clothes and bed linen:

REPORT OF CASES

The following brief case histories illustrate the types of problems encountered. The first represents a recalcitrant case in which other remedies had failed:

CASE 1.—R. M., a white man aged 24, presented widespread persistent scabies eruption of over four months' duration. The patient was treated three weeks previously with 10 per cent sulfur ointment and one week later with 20 per cent benzyl benzoate emulsion, with little change in the rash or the symp-

Data in 100 Cases in Which Hexachlorocyclohexane Was Used for Scabies

Patients	Condition	No. of Treatments				Fail-ures	Reac-tions
		Total	One	Two	Three		
Adults	Uncomplicated	61	41	20	0	0	0
Adults	Secondarily Infected	5	1	4	0	0	0
Children	Uncomplicated	30	18	9	3	0	0
Children	Secondarily Infected	4	1	3	0	0	0
Total.....		100	61	36	3	0	0

tom complex. Following application of hexachlorocyclohexane cream, itching ceased within twenty-four hours, and when the patient was seen one week later all signs of activity had disappeared.

The following cases illustrate the fact that when one member of a family contracts scabies, all others must be examined; if affected, they should be treated simultaneously in order to avoid reinfection:

CASE 2.—A white family, E. H. aged 39, H. H. aged 41, R. H. aged 13, C. H. aged 11 and J. H. aged 7, contracted the disease. R. H. had returned from a boys' camp three months prior to examination with itching rash, and during the next two months all members of the family became similarly affected. *Acarus scabiei* was demonstrated. One week following treatment, all were free of symptoms and signs of activity except C. H., who still showed a few excoriated papules on the wrists, with slight itching. (*Acari* were not found, although carefully searched for). A second application of the cream caused complete disappearance of the eruption and itching.

The next case illustrates the fact that scabies should be suspected more often in private practice:

CASE 3.—Mrs. A. C., a woman aged 46, a private patient, was seen with an itching eruption of six months' duration. The patient stated that her husband had been under the care of a professor of medicine of a large eastern medical school for the past two years for a similar eruption, diagnosed as allergy. Many patch tests had been performed, elimination diets prescribed and local medicaments applied, with no relief. *Acarus scabiei* was demonstrated in the wife, and a single application of hexachlorocyclohexane cream caused disappearance of the rash and pruritus. The husband was then brought in and similarly cured.

9. Smith, L. W.: Personal communication to the authors.

10. Dr. Meyer Slatkin assisted in the treatment of patients at City Hospital.

The remaining case also illustrates the same point and, in addition, suggests that severe secondary dermatitis is no contraindication to the use of this new scabicide:

CASE 4.—L. B., a man aged 32, a private patient, complained of itching rash on the abdomen, more pronounced just below the ribs. (Two or three days later the wife was similarly affected.) His physician made a diagnosis of scabies and prescribed benzyl benzoate emulsion. Four days after he used this, blisters appeared on his hands, fingers and ears, with redness and swelling. The physician then prescribed starch baths, calamine lotion and pills. When first seen by one of us, the patient's hands and ears had improved somewhat, but severe generalized itching interfered with sleep. Typical lesions of scabies were present on the fingers, axillary folds, scrotum, abdomen and buttocks. There were also ecematized red scaly dime-sized to quarter-sized patches in those areas. Dried vesicles and bullae were seen. The diagnosis was scabies and dermatitis, and hexachlorocyclohexane cream was prescribed. On the following day there was great improvement in both the itching and the dermatitis.

TESTING OF PATIENTS FOR SENSITIVITY

All patients were requested to return from one to two months after cure for patch tests to determine the development of sensitivity. Thirty-four patients complied and were so tested, and in no instance was a positive reaction elicited.

One hundred and three untreated patients at City Hospital were given patch tests with the scabicide cream for primary irritation. Test sites were observed at the end of forty-eight and seventy-two hours. All reactions were negative.

Although no evidence of irritation was encountered in this series, it is realized that the possibility of sensitization to hexachlorocyclohexane or other ingredients of the cream must always exist. However, this toxicity potential is evidently low, and the development of hypersensitivity is rendered even more unlikely by the fact that the preparation is therapeutically effective on one or two applications in most cases and in our experience has never had to be used more than three times by any patient.

A small group of patients with pediculosis corporis and pubis were also treated with good results, but are not included in this report.

SUMMARY AND CONCLUSIONS

One hundred unselected patients with scabies were treated with a new preparation of the gamma isomer of hexachlorocyclohexane in a vanishing cream base, with 100 per cent cures.

The remedy was effective in cases in which other preparations had failed.

No cases of irritation or sensitivity occurred, either as primary or late manifestations.

No contraindications were elicited, even in the presence of severe secondary dermatitis.

The preparation was also successful in the treatment of pediculosis in the few cases in which it was tried.

Sodium Salicylate a Toxic Substance.—Sodium salicylate is widely used in the treatment of acute rheumatic fever and the more chronic forms of rheumatism. While there may be disagreement as to its precise value in the therapy of various rheumatic conditions, there is general agreement that it is a toxic substance giving rise to a variety of untoward and even alarming symptoms which may interfere with its administration. —Graham, J. D. P., M.D., and Parker, W. A., M.D., *The Quarterly Journal of Medicine*, April 1948.

TEMPERATURE COMPARED WITH RAT TEST FOR PREDICTION OF HUMAN OVULATION

A Study of Twenty-Seven Cases

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The fact that the body temperature varies during the menstrual cycle has been known for many years. The alteration in temperature which takes place at the time of ovulation has been employed as an aid in trying to overcome the infertility of certain couples. Tompkins,¹ in reference to the work of others, said:

All this literature may be summed up thus: A record of body temperatures taken daily under standard conditions shows a typical curve during the menstrual cycle. The temperature is relatively low during the first part of the month, drops to a minimum about the time that ovulation occurs and rises definitely thereafter to a relatively high level, which is maintained until the next menses, when the temperature drops abruptly.

Tompkins¹ stated:

If the temperature shows a rise of 2 or 3 fifths of a degree, and if this rise corresponds with a similar rise in the previous menstrual month and is not due to illness, then it can be assumed that ovulation is occurring and that intercourse is most likely to be fruitful. Intercourse more than once in twenty-four hours is probably unnecessary. (It is supposedly true that ovulation is indicated by the lowest temperature recorded. However, it is impossible to advise patients to have intercourse when the temperature is lowest, since it is impossible to determine in advance when the lowest point is reached. For this reason I have advised intercourse when the temperature shows a rapid rise.)

Greulich's² observations indicate that ovulation usually occurs after the temperature has passed its low point and has begun its rise. His observations were based on histologic studies of corpora lutea which were removed at operations performed after the observed rise in body temperature.

Buxton³ reported one hundred and twenty-seven temperature records. Three quarters of these were atypical. He concluded that it is practically impossible to predict the time of ovulation from knowledge of the temperature curve.

Since these observers and others have been unable to agree that ovulation occurs at a definite point in the temperature curve, it would seem doubtful that any correlation exists between time of ovulation and any definite point on the temperature curve.

In 1946 I⁴ reported a new method for detecting the time of human ovulation. Results obtained by Murphy and me⁵ indicated the practical value of this test in a study of 10 patients who conceived following the prediction of the day of ovulation. I shall report fifty additional conceptions timed by the rat test in a forthcoming paper.⁶

From the Wistar Institute of Anatomy and Biology.
This investigation was aided by a grant from the Samuel S. Fels Fund.

Suggestions made by Dr. Douglas P. Murphy have been incorporated in this paper.

1. Tompkins, P.: The Use of Basal Temperature Graphs in Determining the Date of Ovulation, *J. A. M. A.* 124: 698 (March 11) 1944.

2. Greulich, W. W.: The Reliability of "Basal" Body Temperature Changes as an Index of Ovulation in Women, *Tr. Am. Soc. Study Sterility*, 1: 76, 1946.

3. Buxton, C. L.: The Atypical Secretory Phase, read at the Conference on Menstruation and Its Disorders, National Committee on Maternal Health, New York, Jan. 25, 1947.

4. Farris, E. J.: A Test for Determining the Time of Ovulation and Conception in Women, *Am. J. Obstet. & Gynec.* 52: 14, 1946.

5. Murphy, D. P., and Farris, E. J.: Conception Following the Prediction of the Day of Ovulation with the Rat Test, *Am. J. Obst. & Gynec.* 54: 467, 1947.

6. Farris, E. J.: The Prediction of the Day of Human Ovulation by the Rat Test as Confirmed by Fifty Conceptions, *Am. J. Obstet. & Gynec.*, to be published.

The present communication deals with a series of women in whom ovulation was timed by the rat test. Each subject submitted a record of her basal body temperature taken during the months that the rat tests were being performed. Evidence is presented in order to illustrate the relative value of the two methods in the timing of ovulation. The day of ovulation was confirmed in each case by the occurrence of conception.

MATERIALS AND METHODS

Observations of 27 women were made. Basal body temperatures were taken rectally. The thermometer was placed in the rectum at the same hour each morning for a period of five minutes. This was done before the patient arose for the day. The temperature reading was recorded immediately on a graph.

The occurrence of ovulation was detected by the reaction of the ovary of the immature white rat to the urine of the patient.

The technic of the rat test is as follows: Two cubic centimeters of urine which the patient passes on arising in the morning are injected subcutaneously into 2 immature female white rats of the Wistar strain. Each animal is killed with illuminating gas at the end of two hours. The abdomen is opened. The two ovaries are drawn, one at a time, into the wound, and the color of each is compared with the graded

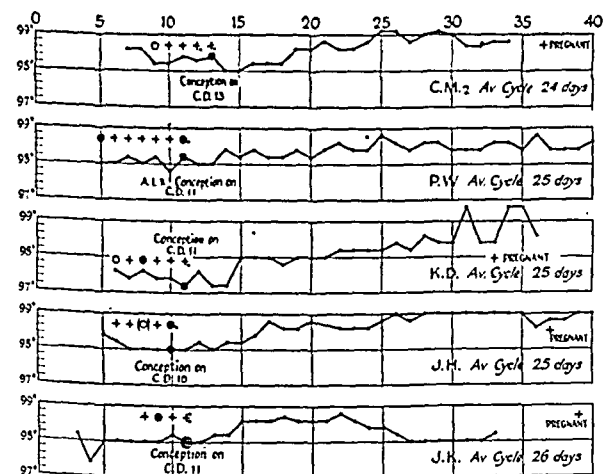


Fig. 1.—Basal body temperature records of 5 women who conceived before they experienced a rise in temperature. The graphs are arranged from above downward, from the shortest to the longest average length of menstrual cycle. The date of successful coitus is indicated, as determined by the rat ovulation test. The base line (abscissa) represents the days from the beginning of the menstrual cycle. The vertical line (ordinate) represents the rectal temperature. "O" inside the graph indicates a negative rat ovary reaction; "A" indicates a weak reaction; "+" represents a positive reaction. The latter indicates that the process of ovulation is under way, with ovulation impending, on the last cycle day of the "+" reaction. The points on the curve indicate intercourse or insemination; "O" on the temperature graph indicates intercourse or insemination, with an eight to ten hour interval. "C.D." marks the cycle day of conception; "A.I." indicates artificial insemination by homologous donor; "A.I.X." indicates artificial insemination by an anonymous donor. "Av. cycle days" indicates the average length of the menstrual cycles before conception occurred.

shades of red of the Munsell color system. In the presence of normal ovulation, the patient's urine induces hyperemia in the ovaries of the rat on four or five consecutive days.

The first month is utilized as a control. No attempt at conception is advised during this month. The control month tells whether ovulation occurs, when it takes place in relation to the duration of the cycle and whether the reaction is normal or abnormal. There is strong evidence to indicate that the egg is ready for fertilization on the last day of the reaction.

During the following month, intercourse is advised or artificial insemination is performed on the last day of the reaction, if the latter is normal.

Intercourse is interdicted during each testing period, since the act affects adversely the color reaction.

Twenty-three of the 27 women had their ovulation timed during the month that conception occurred. The remaining 4, who had been studied previously, were not available for timing during the months when they conceived. They had been advised, however, as to the probable date of ovulation. Sixteen of the women became pregnant by coitus and 9 by single inseminations

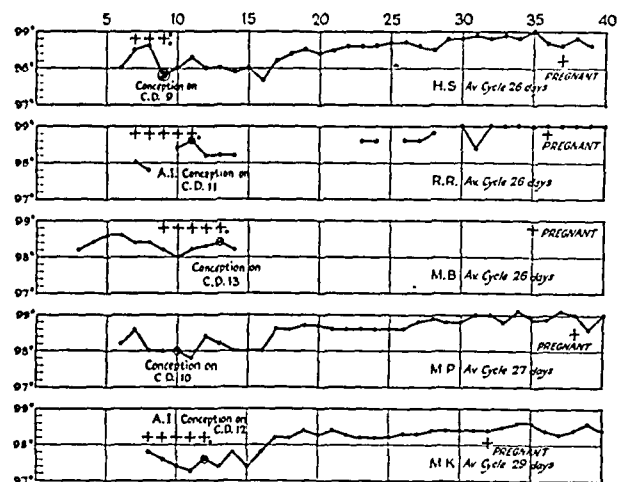


Fig. 2.—Basal body temperature records of 5 women who conceived before they experienced a rise in temperature. The graphs are arranged from above downward, from the shortest to the longest average length of menstrual cycle. The date of successful coitus is indicated as determined by the rat ovulation test. (Explanation of the symbols may be found in the legend for figure 1.)

—4 by anonymous donors and 5 by homologous donors. In 2 others insemination was with the husband's sperm, and they were advised to have coitus eight hours later.

The observations are presented according to the time that conception took place in relation to variation in basal body temperature: (1) before the rise, (2) at the drop, (3) during the rise and (4) after the rise.

RESULTS

The graphs in figures 1 to 6 are arranged from above downward, from the shortest to the longest average length of menstrual cycle.

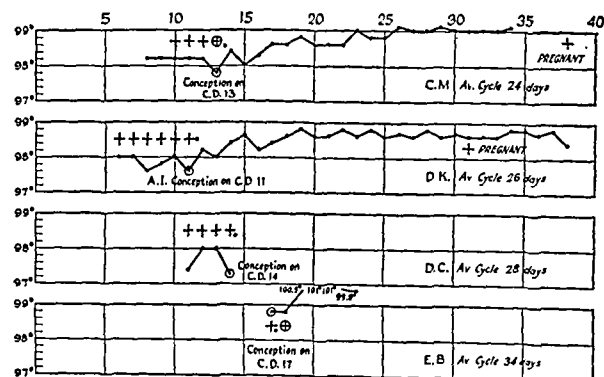


Fig. 3.—Basal body temperature records of 4 women who conceived on the temperature drop. (Explanation of the symbols may be found in the legend for figure 1.)

The twenty-seven records presented in these figures reveal the fact that from two to fifteen days were required for the rising temperature to reach its highest point. The majority, or 59 per cent, of the temperature rises required four or more days. The temperature rise was abrupt in only 1 subject (K. D., fig. 1).

The cycles averaged twenty-four to thirty-four days in length. Conceptions occurred on cycle days 9 to

17, inclusive. The time elapsing between ovulation and menses (postovulatory interval) during the months before the one in which conception occurred averaged fourteen and seven-tenths days, with a range of from eleven to seventeen days.

Conception occurred before the rise in temperature in 10 cases (figs. 1 and 2). The actual day of ovulation as determined by the two hour rat test is indicated in the figures.

The case of P. W. (fig. 1) is typical. Her menstrual cycles averaged twenty-five days in length during the nine months before she conceived. Her temperature rose gradually from cycle days 10 to 25. The rat reaction indicated that her ovulation occurred on cycle day 11. Insemination on that day, with the sperm of an anonymous donor, resulted in pregnancy. The temperature change in this patient is difficult to interpret. It is assumed that the postovulatory interval of this patient during the month that she conceived would have been fourteen days in length.

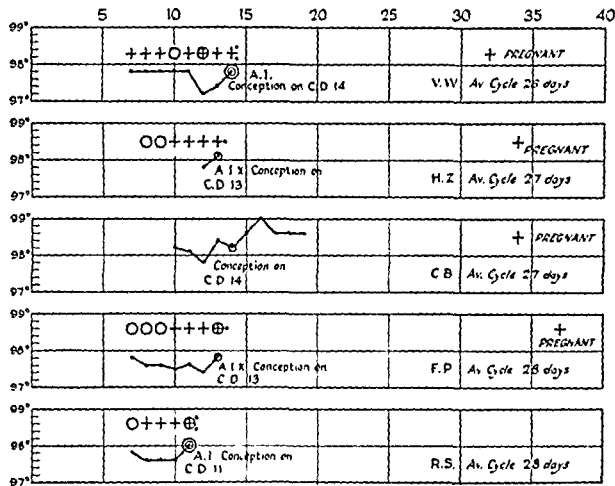


Fig. 4.—Basal body temperature records of 5 women who conceived as their temperatures rose. The graphs are arranged from above downward, from the shortest to the longest average length of menstrual cycle. The date of successful coitus is indicated. (Explanation of the symbols may be found in the legend for figure 1.)

Figure 3 gives the temperature records of 4 women who conceived as their temperatures were dropping. The records of the first 2 subjects are complete. The record of the third woman is incomplete. The record of the fourth patient (E. B.) might be considered abnormal in view of the fact that her temperature exceeded 100 F. No explanation could be found for this unusually high temperature. The conception of this patient, which took place on cycle day 17, might be interpreted as having occurred either just before her temperature rose or while it was dropping.

Figures 4 and 5 contain the records of 10 women who conceived as their temperatures rose. The records of 5 of these women (C. B., H. R., W. M., D. T. and M. B.) are complete and conclusive. The records of the remaining 5 women are too incomplete to be conclusive, but suggest that the rise in temperature and ovulation were synchronous.

Figure 6 includes the records of 2 women who conceived after their temperatures had risen. The temperature of subject R. D. rose during cycle days 6 to 10, inclusive. Her conception occurred on cycle day 12. The temperature of subject H. K. rose during days 8

to 10. She conceived on cycle day 12, after insemination with the sperm of an anonymous donor.

The record of patient J. S. (case 27) is included in figure 6 to demonstrate a temperature shift which took place during the course of an unusually long cycle. The cycles of this woman averaged thirty-nine days in

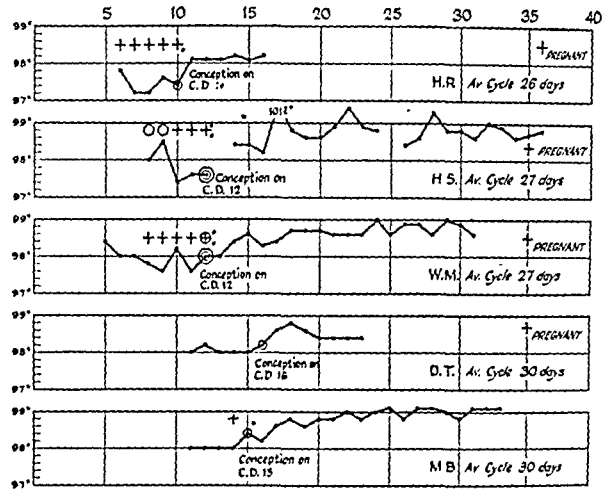


Fig. 5.—Basal body temperature records of 5 women who conceived as their temperatures rose. The graphs are arranged from above downward, from the shortest to the longest average menstrual cycle length. The date of each subject's successful coitus is indicated. (Explanation of the symbols may be found in the legend for figure 1.)

length, with a range of from thirty-eight to forty-five days. Her temperature rose over a period of four days between cycle days 36 and 40. Conception occurred on cycle day 34, which was two days before her temperature rose.

The table summarizes the records of the 27 women, data for whom are detailed in the figures. It lists the cycle days during which the temperature rose from the low to the high point, the day of conception, the average length of the menstrual cycles before conception and the postovulatory interval.

The groups are arranged as follows: Cases 1 to 10 (from figures 1 and 2) are those in which conception

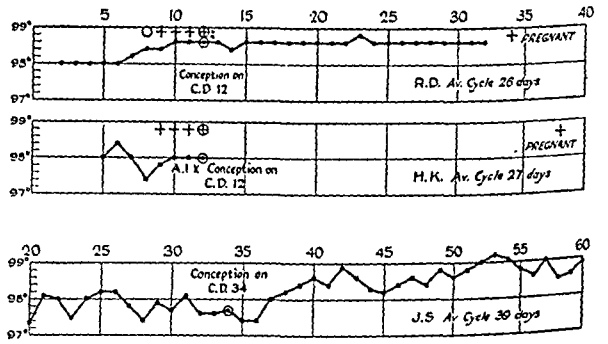


Fig. 6.—Basal body temperature records of 3 women who conceived. The first 2 women conceived after the rise in their temperatures. The ovulation (conception) date is indicated as determined by the rat ovulation test. The third subject (J. S.) conceived before her temperature rose. This record is listed separately because of the unusual length of the menstrual cycles, which ranged from thirty-eight to forty-five days and averaged thirty-nine days. (Explanation of the symbols may be found in the legend for figure 1.)

occurred before the temperature rise; cases 11 to 14 (fig. 3) are those in which conception occurred on the temperature drop; cases 15 to 24 (figs. 4 and 5) are those in which conception occurred during the tem-

perature rise, and cases 25 and 26 (fig. 6) are those in which conception occurred after the temperature rise.

In case 27 there were unusually long cycles, ranging from thirty-eight to forty-five days in length, with an average of thirty-nine days. The data in this case are listed separately.

COMMENT

Forty-one per cent of the twenty-seven conceptions occurred before there was any change in basal body temperature; 7 per cent took place after the rise. Fifteen per cent occurred as the temperature dropped; 37 per cent occurred during the rise. The latter two percentages are subject to question, as four of the temperature records were incomplete. If these records had been complete, they might have revealed a second drop in the temperature.

ing from patient to patient. From this study, therefore, it is concluded that the changes which may occur in the basal body temperature do not offer an efficient means for predicting the day of ovulation.

SUMMARY AND CONCLUSIONS

In 27 patients who conceived, the ovulation date was determined by the rat ovulation test and compared with the basal body temperature record.

At least 41 per cent of the conceptions took place before there was any change in temperature. Thirty-seven per cent were interpreted as occurring as the temperature was rising; 15 per cent of the subjects conceived when their temperatures were at the lowest point, and in 7 per cent conception took place after the rise.

Summary of Data

Identification Figure No.	Case No.	Cycle Days of Tempera- ture Rise	Concep- tion Day	Average Length of Menstrual Cycle	Post- Ovulatory Interval	Remarks
1	1	15-19	13	24	11	Coitus cycle day 12 and 13; conception before rise
	2	10-25	11	25	14	A.I.X.*; conception before rise
	3	14-15	11	25	14	Abrupt rise in temperature; conception before rise
	4	13-17	10	25	15	Conception before rise
	5	12-15	11	26	15	Coitus twice on cycle day 11; conception before rise
2	6	16-19	9	26	17	Coitus twice on cycle day 9; a second rise possible between cycle days 9 and 11; conception before rise
	7	Inc.†	11	26	15	A.I.; on cycle day 11; obvious conception before rise
	8	Inc.†	13	26	13	Probable conception before rise
	9	11-17	10	27	17	Conception before rise
	10	15-17	12	29	17	Conception before rise
3	11	13-19	13	24	11	Conception occurring on temperature drop
	12	11-19	11	26	15	A.I.; conception occurring on temperature drop
	13	Inc.†	14	28	14	Temperature record interpreted as conception occurring on temperature drop
	14	Inc.†	17	34	17	Abnormal temperature; interpreted as conception occurring during temperature drop
4	15	Inc.† 12-14	14	26	12	A.I. once; coitus once on same day; conception occurring during temperature rise
	16	Inc.†	13	27	14	A.I.X.; interpreted as conception during temperature rise
	17	12-16	14	27	13	Conception occurring during temperature rise
	18	Inc.† 12-14	13	28	15	A.I.X.; interpreted as conception during temperature rise
	19	Inc.† 10-11	11	28	17	A.I.; interpreted as conception during temperature rise
5	20	8-11	10	26	16	Conception occurring during temperature rise
	21	Inc.† 12-14	12	27	15	Conception occurring during temperature rise
	22	11-15	12	27	15	Coitus twice same day; conception occurring during temperature rise
	23	15-18	16	30	14	Conception occurring during temperature rise
	24	14-18	15	30	15	Conception occurring during temperature rise
6	25	6-10	12	26	14	Conception occurring after temperature rise
	26	8-10	12	28	16	Conception occurring after temperature rise
	27	38-45	34	38-45	..	Unusual cycle, conception occurring before temperature rise
		Average	12.3	27	14.7	

* A.I.X. is artificial insemination, anonymous donor.

† Inc. is incomplete temperature record.

‡ A.I. is artificial insemination.

In some cases there appeared a rise in temperature, followed by a drop and subsequent rise. When such double shifts occur it becomes difficult, if not impossible, to predict the time of ovulation on the basis of basal body temperature.

The rises in temperature were gradual in practically all instances, requiring several days for their completion. The shift from the low to the high point, in the majority of cases, averaged only 1 degree, with a range of from 3/5 to 1 2/5 degrees.

These observations indicate that the changes in basal body temperature in most instances are of such a nature that they do not permit an accurate timing of ovulation. It is accepted generally that ovulation is impending when the temperature is at its lowest point, rather than during its rise, which is rather variable. In this investigation at least 48 per cent of the conceptions took place before or after the change in temperature. From this fact alone it would appear that, in spite of a bimodal curve, a consistent temperature pattern is lack-

Two to fifteen days were required for the temperature change to be completed. An average of four and five-tenths days was required for the temperature to rise from its lowest to its highest point.

The average temperature shift from the low to the high point was 1 degree, with a range of from 3/5 to 1 2/5 degrees.

Conceptions occurred on cycle days 9 to 17, in cycles which averaged twenty-four to thirty-four days in length. Eighty-five per cent of the conceptions occurred between cycle days 10 to 14, inclusive. The postovulatory intervals in the months prior to the one in which conception took place averaged fourteen and seven-tenths days, with a range from eleven to seventeen days.

The use of the basal body temperature as a method for detecting the time of ovulation may serve as an aid in the treatment of infertility in women in about 45 per cent of the cases. It is not a satisfactory method for detecting the day of ovulation of all patients.

CHEMOSURGICAL TREATMENT OF CANCER OF THE SKIN

A Microscopically Controlled Method of Excision

FREDERIC E. MOHS, M.D.

Madison, Wis.

The term "chemosurgery" was coined to designate a newly developed method for the treatment of cancer. The most important feature of the method is the technic by which thorough microscopic control of excision may be attained. This microscopic control makes possible, in effect, the selective destruction of cancer with the resultant dual advantages of unprecedented reliability and conservatism. The use of the method is limited to accessible regions of the body because the procedure is carried out in stages.

The development of the method, both in the laboratory¹ and in the clinic,² has been described as has been the application of the method in the treatment of cancer of the lip,³ nose,⁴ ear,⁵ eyelid,⁶ face,⁷ extremities and trunk.⁸ The present article concerns the chemosurgical treatment of cancer of the skin except for the orificial cancers affecting the lips, vulva, penis and anus. The therapeutic results in a consecutive series of 814 cases in which the patients were observed for a period of three years or more are presented.

TECHNIC

In the chemosurgical treatment of cancer of the skin, the microscopic control of excision is accomplished by means of a process consisting of the following steps: (1) chemical fixation in situ of the tissues suspected of being cancerous by means of a paste containing zinc chloride, (2) excision of a layer of the fixed tissue, (3) location of the cancerous areas by systematic microscopic examination of the excised tissues, (4) further chemical treatment limited to the areas demonstrated to be cancerous and (5) repetition of the process until the cancer, including all its irregular extensions, has been entirely excised.

To illustrate the way in which the chemosurgical technic is carried out, there will be described the chemosurgical excision of a cancer of the temple (fig. 1A).

The lesion was first noticed seven years previously as a small, crusted ulcer on the left temple just lateral to the eyebrow. The patient had received no treatment except for the application of a caustic plaster by a "cancer quack." The lesion consisted of an irregular, indurated mass 4 cm. in diameter. The neoplasm protruded slightly but the main mass appeared to be below the level of the skin. It was fixed to the underlying bone and there was

an extension into the lateral part of the upper eyelid. The central part of the lesion was ulcerated.

After preparation with 0.03 Gm. of codeine and 0.65 Gm. of acetylsalicylic acid, dichloroacetic acid was applied to the skin which covered the peripheral portion of the neoplasm. This keratolytic chemical served to render the surface keratin permeable to the zinc chloride. The first application of the zinc chloride fixative⁹ was made in a depth of approximately 2 mm. The applied material was covered with a thin layer of cotton, and this in turn was covered with a layer of cotton on which petrolatum was spread to maintain a moisture-tight closure. The dressing was fastened in place with adhesive tape and the patient was instructed to take the analgesics mentioned previously as often as every three hours, as needed.

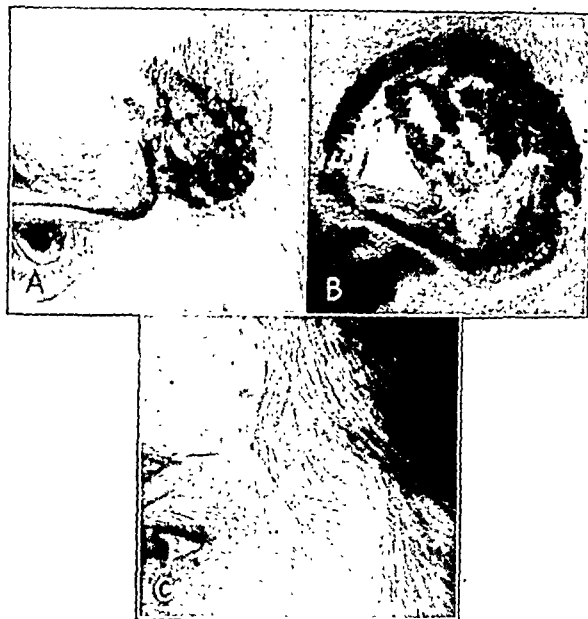


Fig. 1.—A, basal cell carcinoma of group D (average diameter 3 or more cm.). Starting seven years previously, the ulcerated mass had continued to enlarge though treated with caustic applications. The neoplasm was excised in six microscopically controlled stages by the chemosurgical technic (fig. 2). B, appearance of the lesion after separation of the final layer of fixed tissue. A small area of bone near the anterior edge is exposed. C, healed lesion. The patient is free of cancer after ten years.

On the next day a layer of tissue approximately 5 mm. thick was excised with a scalpel. Since the incision was carried through fixed tissue there was no pain or bleeding from this procedure. After the excision of this layer, the cancer was grossly visible as a white friable tissue. Therefore microscopic visualization was unnecessary at this stage and the fixative was reapplied to the entire area. A frozen section revealed the neoplasm to be a highly invasive basal cell carcinoma. The following day another layer of tissue was excised and again the entire area was seen to be cancerous by gross examination. Consequently, the fixative was again applied to the entire area.

On the third day, however, it was impossible to determine by gross examination how much of the lesion contained cancer. Therefore, the entire excised layer was divided into four specimens of convenient size. Frozen sections were immediately cut through the under surface of each of these specimens so that the entire area could be subjected to systematic microscopic examination. To aid in orientation, the edges of the specimens were marked with india ink and with merbromin, which coloring materials were retained throughout the procedure by which the tissues were frozen, cut, stained, cleared and mounted. The locations from which the specimens were removed were marked on the lesion with merbromin, the red color of which stood out well against the white fixed tissue. A map also was drawn on a pad of paper. By scanning the microscopic sections it was found that almost the entire area was cancerous (fig. 2A). The fixative paste was reapplied to all but the small area at the lower edge, which was demonstrated to be free of cancer.

On the next two days, the procedure was repeated and the area of cancer was found to decrease in size (figs. 2, B and C) and

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1. Mohs, F. E., and Guyer, M. F.: Pre-Excisional Fixation of Tissues in the Treatment of Cancer in Rats, *Cancer Research* 1:49 (Jan.) 1941.

2. Mohs, F. E.: Chemosurgery: A Microscopically Controlled Method of Cancer Excision, *Arch. Surg.* 42:279 (Feb.) 1941.

3. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Lip: A Microscopically Controlled Method of Excision, *Arch. Surg.* 48:478 (June) 1944.

4. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Nose: A Microscopically Controlled Method, *Arch. Surg.* 53:327 (Sept.) 1946.

5. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Ear: A Microscopically Controlled Method of Excision, *Surgery* 21:605 (May) 1947.

6. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Eyelid: A Microscopically Controlled Method of Excision, *Arch. Ophth.*, 39:43 (Jan.) 1948.

7. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Face: A Microscopically Controlled Method of Excision, *Arch. Dermat. & Syph.* 56:143 (Aug.) 1947.

8. Mohs, F. E.: Chemosurgical Treatment of Cancer of the Extremities and Trunk: A Microscopically Controlled Method of Excision, *Arch. Surg.*, to be published.

9. This fixative paste contains 40 Gm. of stibnite (80 mesh sieve), 10 Gm. of powdered sanguinaria and 34.5 cc. of a saturated solution of zinc chloride.

on the following day, the entire area was free of cancer (fig 2D). Each application of the fixative was limited to the areas demonstrated to be cancerous. The most deeply situated portion of the cancer involved the periosteum of the bone of the orbital rim (fig. 2, C and D). Thus, the more deeply situated portions of the cancer were followed microscopically for four days after the cancer tissue became indiscernible to the naked eye. The

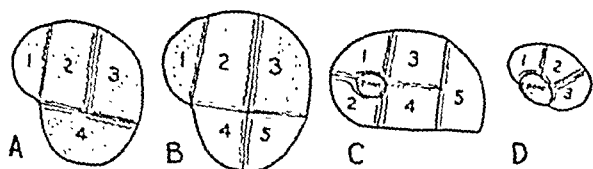


Fig. 2.—Maps showing locations of specimens removed on successive days from the lesion pictured in figure 1. Stippled areas represent cancer located by microscopic examination of frozen sections through the under surface of each specimen.

microscopic control made it possible to be radical in the excision of the anterior part of the lesion where the cancer extended deeply and to be conservative in the excision of the posterior part of the lesion where the cancer was more superficial.

The lesion was covered with petrolatum gauze for seven days, after which interval the final layer of fixed tissue was removed, revealing granulation tissue except in the region where the bone was exposed (fig. 1B). Another two weeks elapsed before the fixed bone separated, and the lesion was healed when the patient returned for a checkup one month later. The final scar was soft, smooth, pliable and almost the same color as the surrounding skin (fig. 1C). The patient was free of cancer after ten years.

As reported in the articles on the chemosurgical treatment of cancer in various locations, the time required for separation of the final layer of fixed tissue varies according to the tissues involved. Thus, while separation of the fixed tissue from most regions of the face requires about seven days, the period is only three days for the eyelids, four days for the lower lip and as much as ten days for the back. Apparently, the thicker the dermis, the longer the time required for separation of the fixed tissues.

Hemorrhage is not a problem except when one is working in the region of the large vessels, such as the common carotid artery or the jugular vein. Arteries such as the superficial temporal or the external maxillary vessels ordinarily do not bleed during separation of the fixed tissue. If there seems to be some likelihood that bleeding will occur, it is wise to place a suture-ligature around the vessel during the period of separation.

The amount of analgesic medication required for the control of the pain during the period of penetration of the fixative varies with the size and location of the lesion. Small lesions may be treated without the use of analgesics, but patients with large lesions in sensitive areas may require analgesics as potent as morphine.

For the technical details of the chemosurgical treatment of cancer in various anatomic sites, the reader is referred to previously published articles.

THERAPEUTIC RESULTS IN CASES OF BASAL CELL CARCINOMA OF THE SKIN

A total of 555 patients with basal cell carcinoma of the skin were chemosurgically treated during the eight year period ending Aug. 31, 1944. The extent of the lesions varied from early to extremely advanced and many would ordinarily be classed as inoperable. Over one third of the cancers were recurrent after previous surgical, radiation or caustic treatment. There was no instance of metastasis.

Three Year and Five Year End Results.—The 555 cases of basal cell carcinoma were divided into "indeterminate" and "determinate" groups, according to the

example of Martin, MacComb and Blady.¹⁰ The indeterminate group includes (1) the cases of patients who died of intercurrent disease without evidence of recurrence and (2) those who were lost from observation without recurrence. The determinate group is composed of (1) the cases of patients in whom unsuccessful results were obtained (the patients who died of cancer, who were lost from observation with cancer or who are living with cancer) and (2) the cases of patients in whom successful results were obtained (the patients who remained free of cancer for a period of three years or more). In the 458 cases of basal cell carcinoma in the determinate group the rate of cure after three years or more was 97.4 per cent (table 1).

TABLE 1.—End Results for Basal Cell Carcinoma of the Skin after Periods of Three Years and Five Years.*

	Three Year Period	Five Year Period
Total number of cases	555	398
Indeterminate group		
Patients dead from other causes without recurrence	78	87
Patients lost from observation without recurrence	19	20
Total number	97	107
Determinate group		
Total number	458	291
Unsuccessful results		
Patients dead, cancer present at time of death	9	8
Patients lost from observation with cancer	3	3
Patients living with cancer	0	0
Total number	12	11
Successful results		
Patients free from cancer for three years or more	446	
Patients free from cancer for five years or more		280
Three year end results		
Total number of cases with successful results divided by total number of determinate cases (446÷458)	97.4	
Five year end results		
Total number of cases with successful results divided by total number of determinate cases (280÷291)		96.2

*This series includes the cases of all patients with histologically proved basal cell carcinomas, both early and advanced, previously untreated and recurrent, who were admitted to the Chemosurgery Clinic from June 26, 1936, to Aug. 31, 1944, for the three-year group, and from June 26, 1936, to Aug. 31, 1944, for the five-year group.

In the five year period there was a total of 398 cases of basal cell carcinoma of the skin. The rate of cure in the 291 cases in the determinate group was 96.2 per cent (table 1).

Effect of Size of Lesion on Prognosis.—The 458 basal cell carcinomas in the determinate group in the three year period were placed in four groups according to the size of the primary lesion as measured at the initial examination of the lesion (table 2). The lesions in group A had an average diameter under 1 cm., group B, 1 to 2 cm., group C, 2 to 3 cm., and D, 3 cm. or more (figs. 1, 3 and 4).

As was to be expected, the prognosis was, to some extent, influenced by the size of the lesion (table 2). Thus, of the 393 lesions in groups A, B and C, there were only 3 unsuccessful results, while in the 65 patients with lesions in group D there were 9 unsuccessfully treated lesions. However, extensiveness per se is not a contraindicatory factor for the chemosurgical treatment of basal cell carcinoma of the skin unless the neoplasm has extended into some vital structure, such as the brain or large vessels such as the carotid artery or jugular vein. A number of patients with extremely advanced carcinomas were chemosurgically treated, and in most

10. Martin, H. E.; MacComb, W. S., and Blady, J. V.: Cancer of the Lip. *Ann. Surg.* 114:341 (Sept.) 1941.

of these successful results were obtained. However, in some, treatment was discontinued because of invasion through the skull into vital portions of the brain (3 patients); some signed their release (2 patients), while some had carcinomas which were found to be too advanced to justify complete removal in consideration of the patients' advanced age and poor general condition (7 patients).

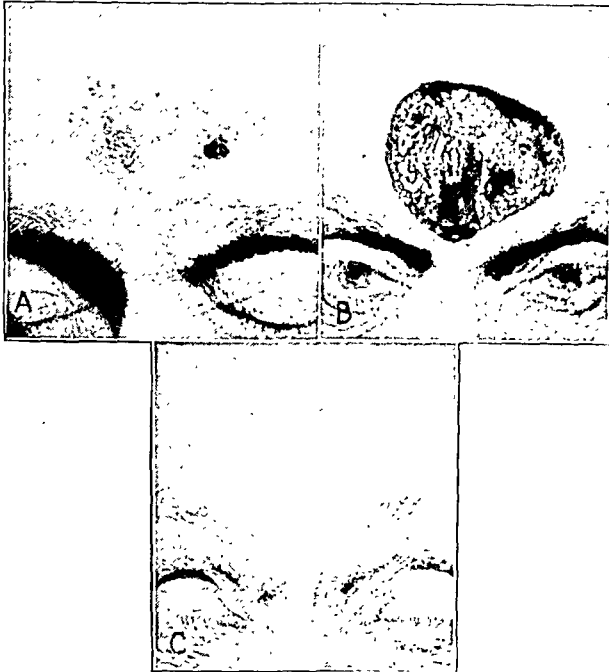


Fig. 3.—A, basal cell carcinoma of group D. The lesion had begun twenty years previously and had repeatedly recurred after treatment with caustics and roentgen rays. Although relatively little cancer was discernible by gross examination, the entire abnormal area and some apparently normal tissues beyond were demonstrated to be invaded by cancer by means of three microscopically controlled excisions. B, granulation tissue following separation of the final layer of fixed tissue. C, healed lesion. The patient is free of cancer after four and one-half years.

Effect of Previous Treatment on Prognosis.—In the 458 cases in the determinate group in which basal cell carcinomas were chemosurgically excised, 155 of the lesions (33.6 per cent) had previously been unsuccessfully treated by surgical operation, roentgen rays, radium or caustics, either alone or in combination. Although it

TABLE 2.—Effect of Size of Basal Cell Carcinoma on Prognosis.

Group	Average Diameter, Cm.	Number of Lesions	Successful Results	
			Number	Percentage
A	Under 1	167	167	100
B	1-2	158	157	99.4
C	2-3	68	66	97.1
D	3 or more	65	56	86.1
All groups		458	446	97.4

was possible to salvage 145 (93.5 per cent) of the patients with recurrent lesions, the rate of cure was appreciably lower than the rate of cure of 99.3 per cent for the 355 cases in which the patients had not been previously treated.

The adverse effect of previous treatment on prognosis is due mainly to the delay occasioned by the ineffective treatment. The fact that 93.5 per cent of the patients with recurrent cancers were successfully treated by the chemosurgical method indicates that this method is particularly valuable for recurrent lesions.

Effect of Degree of Invasiveness on Prognosis.—While there is no formal division of basal cell carcinoma

into grades of malignancy, it is practical to designate their invasiveness as either "high" or "low." The histologic appearance of the highly invasive type is characterized by slender, poorly demarcated groups of carcinoma cells with an indefinite demarcation between them and the copious connective tissue stroma. In contrast, carcinoma with a low degree of invasiveness is composed of large, rounded clumps of basal cells, well demarcated from the surrounding relatively meager connective tissue stroma. Clinically, the highly invasive type is apt to show the erosion, ulceration and deep induration which are characteristic of the rodent ulcer (illustrated by figs. 1, 3 and 4), while the lesion of low invasiveness is apt to show the well defined outgrowing masses characteristic of the nodular type of basal cell carcinoma. Intergradations between these two distinct types are common.



Fig. 4.—A and B, basal cell carcinoma, group D. The lesion was of seven years' duration and had repeatedly recurred after twenty treatments with electrodesiccation and four treatments with radium. There was considerable atrophy, ulceration, crusting and indefinite induration, but the exact extent of the neoplasm was difficult to determine. The highly invasive basal cell carcinoma was excised in twelve microscopically controlled stages by the chemosurgical technic. C, granulation tissue after separation of the final layer of fixed tissue showing how much more extensive the neoplasm was than could be determined at the initial examination. In particular the extensions into the forehead and cheek regions were not foreseen. D, healed lesion. The uninvolved inferior border of the septum was preserved for use in the plastic reconstruction. The patient is free of cancer after five years.

In the 458 cases in the determinate group, 305 (66.6 per cent) were classified as highly invasive. In the cases in this group the rate of cure was 96.4 per cent. In contrast, in the 153 cases in which the carcinoma had a low degree of invasiveness, the rate of cure was 100 per cent. However, these figures are not to be taken to indicate that the chemosurgical technic is less strongly indicated in highly invasive lesions. Quite the opposite, the highly invasive recurrent, troublesome lesion is a prime indication for the chemosurgical technic because the microscopic control makes it possible to follow out each of the deeply permeating radicles which are characteristic of these lesions.

Effect of Site of Origin of Basal Cell Carcinomas on Prognosis.—The site of origin of basal cell carcinoma has some influence on the prognosis (table 3). The 222

TABLE 3.—Effect of Site of Origin of Basal Cell Carcinoma on Prognosis.

Site	Number of Lesions	Successful Results	
		Number	Percentage
Ear	37	33	89.2
Extremities and trunk	15	15	100
Eyelids	66	61	92.4
Face and head	207	207	100
Nose	133	130	97.7
All Sites	458	446	97.4

lesions affecting the extremities, trunk, face and head were all successfully treated. The rates of cure for carcinoma affecting the ear, eyelid and nose were less than the foregoing largely because of the greater likelihood that the neoplasm would invade deeply into openings such as the ear canal, the orbit and the nasal cavity. Nevertheless, it is in these locations where complicated patterns of extension are apt to occur that chemosurgical treatment is particularly indicated.

THERAPEUTIC RESULTS IN CASES OF SQUAMOUS CELL CARCINOMA OF THE SKIN

A total of 259 squamous cell carcinomas of the skin were chemosurgically excised in the eight year period ending three years prior to this writing.

End Results After Three Years and Five Years.—The end results were calculated by the same means as were used in the section on basal cell carcinoma. In the three year period, successful results were obtained in 85.6 per cent of 222 cases in the determinate group (table 4). In the five year period, successful results were obtained in 84.4 per cent of 136 cases in the determinate group (table 4).

TABLE 4.—End Results for Squamous Cell Carcinoma of the Skin after Periods of Three Years and Five Years.*

	Three Year Period	Five Year Period
Total number of cases	259	179
Indeterminate group		
Patients dead from other causes without recurrence	35	41
Patients lost from observation without recurrence	2	2
Total number	37	43
Determinate group		
Total number	222	136
Unsuccessful results		
Patients dead, cancer present at time of death	28	20
Patients lost from observation with cancer	1	1
Patients living with cancer	0	0
Total number	29	21
Successful results		
Patients free from cancer for three years or more	190	
Patients free from cancer for five years or more		115
Three year end results		
Total number of cases with successful results divided by total number of determinate cases (190÷222)	85.6	
Five year end results		
Total number of cases with successful results divided by total number of determinate cases (115÷136)		84.4

*This series includes the cases of all patients with histologically proved squamous cell carcinomas, both early and advanced, previously untreated and recurrent, with or without metastases, who were admitted to the Chemosurgery Clinic from July 20, 1936 to Aug. 11, 1944 for the three year group, and from July 20, 1936 to Aug. 31, 1944 for the five year group.

Effect of Size of Lesion on Prognosis.—The squamous cell carcinomas were divided into four groups according to size: A, under 1 cm. in average diameter (fig. 5); B, 1 to 2 cm. (figs. 6 and 7); C, 2 to 3 cm., and D, over 3 cm.

The rate of cure of patients with lesions in groups A and B was extremely high (100 per cent and 95.1 per cent, respectively) while in patients with lesions in group C the rate of cure dropped to 86.6 per cent and in group D to 60.7 per cent (table 5). The main reason for the adverse influence of large size on prognosis was the greater incidence of metastasis associated with the large lesions. Thus, this complication was the cause of an unsuccessful result in 21 patients in whom the primary lesion was eradicated. In only 11 cases was it not feasible to eradicate the primary lesion. In the latter group the cause of failure was the involvement of vital portions

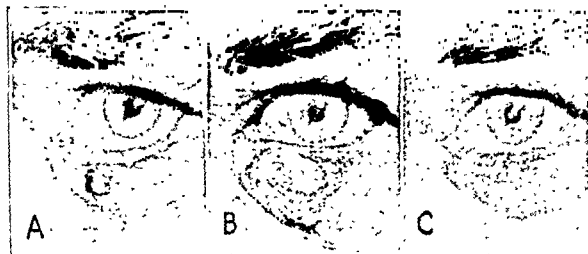


Fig. 5.—A, squamous cell carcinoma of group A (under 1 cm.). The growth was removed in two microscopically controlled stages by the chemosurgical technic. B, granulation tissue after separation of the final layer of fixed tissue. C, healed lesion. The patient was free of cancer when he died five years later.

of the brain in 2 cases, involvement of the large vessels of the neck in 1 case and such deep and extensive involvement in the remaining 8 cases that complete removal was not justifiable because of poor general health, advanced age or the presence of metastasis.

TABLE 5.—Effect of Size of Squamous Cell Carcinoma on Prognosis.

Group	Average Diameter, Cm.	Number of Lesions	Successful Results	
			Number	Percentage
A	Under 1	50	50	100
B	1-2	81	77	95.1
C	2-3	30	26	86.6
D	3 or more	61	37	60.7
All groups		222	190	85.6

While patients with large lesions have a distinctly poorer prognosis, it is not to be inferred that large size, in itself, is a contraindicatory factor as far as chemosurgical treatment is concerned. A considerable number of lesions which were incurable by ordinary surgical and radiation treatment were successfully treated by the chemosurgical method because of the facility with which the ramifying radicles of the advanced carcinoma could be followed out.

Effect of Previous Treatment on Prognosis.—In the 222 cases of squamous cell carcinoma in the determinate group in the three year period, 63 lesions (28.4 per cent) had recurred after previous unsuccessful treatment by surgical, radiation or caustic therapy. While it was possible to salvage 68.3 per cent of this group of recurrent lesions, this rate of cure was considerably below the rate of 92.5 per cent attained by the chemosurgical treatment of the 159 previously untreated lesions.

The adverse influence of previous treatment on prognosis is largely due to the delay occasioned by the use of the unsuccessful treatments. This delay increases the chance of metastasis and the possibility of invasion of vital structures in some cases, while in others the lesion becomes too extensive for eradication of the neoplasm to be practical. Previous therapy, per se, however, is not to be considered a contraindicatory factor as far as

chemosurgical treatment is concerned. Indeed, the most definite indication for chemosurgical treatment may be the lesion which has resisted other forms of therapy.

Effect of Histologic Grade of Malignancy on Prognosis.—Classification of the 222 squamous cell carcinoma



Fig. 6.—A, squamous cell carcinoma, group B. The cancer which had a grade of malignancy of 4, was removed in three microscopically controlled stages by the chemosurgical technic. B, healed lesion. The patient was free of cancer after six years.

nomas of the skin on the basis of Broders' four grades of malignancy revealed a strong correlation between histologic structure and prognosis (table 6). The higher proportion of unsuccessful results associated with carcinoma

TABLE 6.—Effect of Histologic Grade of Malignancy of Squamous Cell Carcinoma on Prognosis.

Grade	Number of Lesions	Successful Results	
		Number	Percentage
1	69	67	97.1
2	97	86	88.7
3	50	36	72
4	6	1	16.6

nomas with a higher grade of malignancy is due to the greater incidence of metastasis and the greater likelihood of invasion of vital structures exhibited by these lesions. A carcinoma which has a high degree of malignancy but which has not yet invaded a vital structure or metastasized has virtually the same prognosis when treated by the chemosurgical technic as a lesion of a lower grade of malignancy. Inasmuch as lesions with the higher grade of malignancy are much more apt to send out irregular, infiltrating extensions into the surrounding tissue, the microscopic control afforded by the chemosurgical technic is particularly advantageous in the treatment of these lesions.

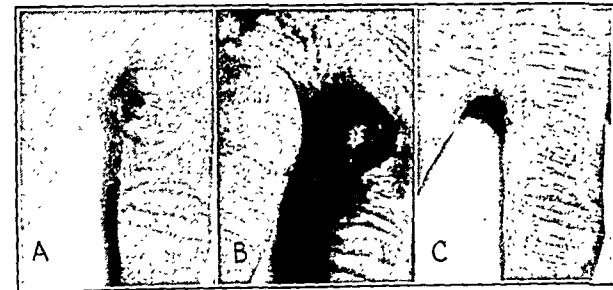


Fig. 7.—A, squamous cell carcinoma, group B, of six months' duration. The growth was removed in three microscopically controlled stages by the chemosurgical technic. B, granulation tissue after removal of the final layer of fixed tissue. C, healed lesion. The patient is free of cancer after nine years.

Effect of Site of Origin of Squamous Cell Carcinoma on Prognosis.—The site of origin had only a minor effect upon the rate of cure of squamous cell carcinoma

(table 7). The lowest rate was for carcinoma of the ear, which is explained by the relatively high proportion of metastasis from lesions in this region and by the proximity to vital structures the invasion of which can render impossible a successful result. The next lowest rate of cure was for squamous cell carcinoma of the extremities and trunk. The low rate in this category is explained by the fact that a large proportion of these lesions affected the hand and fingers, which sites are notoriously unfavorable due to the high incidence of metastasis

TABLE 7.—Effect of Site of Origin of Squamous Cell Carcinoma on Prognosis.

Location	Number of Lesions	Successful Results	
		Number	Percentage
Ear	44	35	80
Extremities and trunk	45	38	84.4
Eyelids	17	16	94.1
Face and head	91	78	85.7
Nose	25	23	92
All sites	222	190	85.6

arising from the great amount of motion in these structures.

Effect of Metastasis on Prognosis.—In cases of squamous cell carcinoma of the skin, the most serious complication is metastasis. Thus, in the 222 cases in the determinate group in the three year period, there were 32 in which unsuccessful results were obtained, and in 27 (84.4 per cent) of these metastases occurred. Also indicative of the serious prognostic influence of metastasis was the fact that of the 29 patients in whom metastasis was present, only 2 (7 per cent) were successfully treated, whereas in the group of 193 patients without metastasis, 188 (97.4 per cent) were successfully treated. In the 27 patients in whom unsuccessful results were obtained due to the presence of metastasis, the primary lesion had been chemosurgically eradicated in every case as far as could be determined when the patient was last seen.

In 18 cases, resection of the metastatic nodes was attempted by members of the surgical staff, but in only 1 was a successful result obtained. One successful result also was obtained by the chemosurgical excision of a metastatic nodule in the inner canthal region secondary to a carcinoma on the nose. In a number of these cases, the nodes were conceded to be inoperable but were resected for the purpose of palliation. Several patients were given palliative roentgen therapy without noticeable benefit.

In several patients whose cases are included in this series the primary lesion was chemosurgically excised in the presence of inoperable metastases for the purpose of palliation.

COMMENT

The unprecedented reliability of the chemosurgical treatment of cancer is indicated by comparison with statistical results from other centers for cancer treatment. One of the best series, with respect to both statistical validity and also excellent therapeutic results, is that of Magnussen,¹¹ who reported on the results obtained in a series of 1,343 cases with the highly developed radiologic, surgical and electrosurgical technics employed at Radiumhemmet in Stockholm, Sweden. From his protocols it was determined that his three year rate of cure for carcinoma of the skin was 88 per cent in the three year period. In the present series of 814 cases, of which 680 were in the determinate group, the rate of cure was 93.6 per cent. This record was attained despite

11. Magnussen, A. H. W.: Skin Cancer: A Clinical Study with Special Reference to Radium Treatment, Acta radiol., 1935, supp. 22, p. 1.

the fact that a higher proportion of my cases were in the groups of the larger-sized lesions and despite the fact that more of my patients previously had been unsuccessfully treated. Another comparable series is that from the Norwegian Radium Hospital as reported by Poppe;¹² his study of 198 cases revealed a rate of cure in the three year period of 80 per cent. Another statistically adequate series is that reported by Warren, Simmons and Rea¹³ from the Huntington Hospital in Boston; they reported a rate of cure of 76 per cent in the five year period. The rate of cure in the present series of 577 cases in the five year period is 93.8 per cent. Some excellent results have been reported in the treatment of cancers falling in the realm of dermatology, as, for example, the series of Elliot and Welton.¹⁴ However, such series are made up, for the most part, of relatively small lesions, whereas the present series includes the cases of a large number of patients whom the dermatologist ordinarily would refer to a surgeon and it even includes a considerable number which ordinarily would be considered inoperable.

The reliability attained by the chemosurgical method does not depend on an excessively radical approach. Quite the opposite; the method is conservative since only 1 or 2 cm. beyond the actual level of carcinomatous invasion at any given point need be removed. In effect, the chemosurgical method, by virtue of the microscopic control, provides a selective means for the destruction of cancer tissue, although, of course, the fixative chemical itself has no selective action.

The reason why microscopic control of excision is necessary for the attainment of maximum reliability and conservatism is the great irregularity and unpredictability of the outlines of most carcinomas of the skin. This is particularly true of the more advanced and recurrent lesions, but it may also be true in the smaller lesions which have not received previous treatment. Frequently, there are found irregular outgrowths of cancer in tissues such as the perineurium, periosteum, perichondrium, lymphatics and embryologic fusion planes. Most of these outgrowths are not initially demonstrable, even by most careful clinical examination, and it is only by the systematic microscopic control of the chemosurgical technic that each of these extensions can be accurately followed out and eradicated.

Another advantage of the chemosurgical method is the virtual absence of operative mortality. This feature is particularly important in view of the advanced age and poor health of a large number of the patients with cancer of the skin. The 1 operative death in this series occurred after an attempt to remove a squamous cell carcinoma which extensively invaded the meninges and the brain in the temporal region.

A disadvantage of the chemosurgical method is that a certain amount of training and experience with the method is essential for the most favorable results. Essential, also, is a special clinic with facilities for the preparation of frozen sections and with the services of technical assistants trained in the handling of the specimens of fixed tissue.¹⁵ I believe that the microtechnical work should be done in or near the chemosurgical clinic.

because the sections should be examined by the operator himself. Another disadvantage is that in the treatment of extensive lesions, the technic is somewhat laborious and time-consuming for the operator and somewhat painful for the patient. However, these disadvantages are of small consequence in consideration of the fact that most of these advanced lesions would not be cured by any other means.

The fact that the chemosurgical method is useful in the treatment of a number of other accessible forms of cancer besides cancer of the skin and the fact that it is applicable to the treatment of certain noncancerous conditions such as precancerous dermatoses, benign neoplasms, radiation ulcers, certain forms of infection and gangrene,¹⁶ make it evident that the method has a rather wide field of application. Therefore, it would seem to be justifiable to recommend the establishment of chemosurgical clinics in each large center of population.

It might be well to mention that zinc chloride, the fixative used in the chemosurgical technic, has been used for over a hundred years in the treatment of cancer. It was used mostly by quacks and irregular practitioners, and there was never any thought of microscopic control. It cannot be too strongly emphasized that the microscopic control is the only unique and by far the most important feature of the chemosurgical method. Without this control, the use of chemicals for the destruction of cancer is completely without justification. A large proportion of the slender outgrowths from the main tumor mass are completely invisible to the naked eye, so that, without microscopic control, the treatment of cancer by caustic chemicals would be unreliable and excessively mutilating.

SUMMARY AND CONCLUSIONS

The chemosurgical technic as used in the microscopically controlled excision of cancer of the skin is described and the therapeutic results in a series of 814 cases are analyzed.

The reliability of the method is indicated by the unusually high proportion of successful results. Thus, for basal cell carcinoma, successful results were attained in 97.4 per cent of the 458 determinative cases observed for three years or more and in 96.2 per cent of 291 cases observed for five years or more. For squamous cell carcinoma, the rate of cure was 85.6 per cent for the 222 cases in the three year period and 84.4 per cent for the 136 cases in the five year group. These results were attained despite the fact that many of the cancers were far advanced and over one third had recurred after previous surgical, radiation or caustic treatment.

The method is conservative, since only 1 or 2 mm. of tissue is removed beyond the point of actual carcinomatous invasion.

The reliability of the method is due to the microscopic control which makes it possible to follow out the irregular and unpredictable extensions from the main tumor mass. The conservatism is also a result of the microscopic control, because this control makes it possible to be only as radical as required by the actual demonstrated extent of the cancer.

There was only 1 death attributable to the chemosurgical procedure in this series of 814 cases.

12. Poppe, E.: Carcinoma cutis, *Am. J. Cancer* 36:179 (June) 1939.
13. Warren, S.; Simmons, C. C., and Rea, S. L.: Cutaneous Carcinoma Diagnosed Clinically Without Biopsy, *J.A.M.A.* 114:1619 (April 27) 1940.
14. Elliot, J. A., and Welton, D. G.: Epithelioma, *Arch. Dermat. & Syph.* 53:307 (April) 1946.
15. Mohs, F. E.: The Preparation of Frozen Sections for Use in the Chemosurgical Technique for the Microscopically Controlled Excision of Cancer, *J. Lab. & Clin. Med.* 33:392, (Mar.) 1948.

16. Mohs, F. E.; Severinghaus, E. L., and Schmidt, E. R.: Conservative Amputation of Gangrenous Parts By Chemosurgery, *Ann. Surg.* 114:274 (Aug.) 1941.

OVERTREATMENT DERMATITIS IN DERMATITIS VENENATA DUE TO PLANTS

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Acute cutaneous symptoms can cause a psychic upset to the same degree as that observed when other organs of the body become ill, perhaps even more so, because the skin is an organ of special sense and gives rise to multiple sensory stimuli. A person at an outing may win all the prizes, but that night he can be pacing the floor, so mentally harassed that he calls out for relief from symptoms of dermatitis due to plants. The itching and burning can so torment him that he is not responsible for his actions. Patients thus afflicted will apply remedy after remedy, blindly groping for relief. In view of this panic-like state which may seize persons with acute cutaneous symptoms, it is their privilege that remedies for the skin in the family medicine chest and purchased by them be reasonably safe. Evidence will be presented that many of these remedies are not safe, some of them dangerous to use. In our series of 202 cases of dermatitis venenata due to plants, 152 patients had applied a remedy or remedies that caused acute complications, and certain chemicals in these changed acute dermatitis into chronic. An era of advanced therapeutics is marred by dermatologic treatments which caused 75 per cent of these patients to be improperly and unwisely managed.¹

The past treatment patch test² was used routinely in this investigation. Each patient was asked to bring in the remedies that he had used. Checking over the bags, baskets, satchels and boxes laden with preparations for the skin proved to us the urgent need for a renaissance in dermatologic therapeutics. The entire gamut of vehicles was jumbled together: tinctures, lotions, creams, powders and salves. The colors of the chemicals transformed the skin into weird patterns as if it had been prepared for an Indian war dance. A barbarous custom is being imitated by dermatologic treatments. The containers of some of the medicaments had all but disintegrated. Often the stoppers had lost their threads, were mere parchment shells or had become soft and pitted, their decomposition products admixed with the preparation. Some of the tinctures showed a slimy flocculation. The lotions looked like old white shoe polish bottles and smelled of phenol. A few were marked inflammable. One bottle, when the stopper which the chemicals had cemented into place was pried loose, popped, and the contents, looking angry and menacing, spurted forth. After this experience we smelled the remedies from the side first. The powders were over everything. Some were caked or lumpy; others had attacked the sifting holes or plugged them up. The salves were colored green, blue, pink, red, brown, black or yellow. They slithered around in the jars or tins with the usual outside smearing. Their consistency was variable; some were uniform, others granulated, speckled or marbled. The ingredients did not affect glass, but the tin containers and plastic tops were honeycombed, pitted and discolored. No flies were seen; these ointments were too potent. One foul salve was more than twenty years old. The patient, an elderly lady, spoke warmly of its healing powers and how she had carefully saved it by changing

to a new tin each time the old one disintegrated. She was shocked at the patch test reaction to this "healing balm." People will save salves like hoarding treasures and use them over and over again in spite of their age and state of decomposition. The conclusion from examining these assortments of dermatologic remedies was that their ingredients were highly active chemicals with irreversible tendencies proceeding until something was affected or destroyed. We saw their disastrous effects in the cases of dermatitis venenata due to plants.

CLINICAL DATA ON THE CASES OF DERMATITIS VENENATA DUE TO PLANTS

DISTRIBUTION OF PATIENTS BY SEX AND DECADE

There were 31 patients in the first decade, 13 males and 18 females; 32 in the second, 10 males and 22 females; 41 in the third, 17 males and 24 females; 36 in the fourth, 21 males and 15 females; 16 in the fifth, 7 males and 9 females; 28 in the sixth, 13 males and 15 females; 13 in the seventh, 5 males and 8 females; and in the eighth, 3 males and 2 females. Eighty-five per cent of the patients were over 10 years old.

DISTRIBUTION OF PATIENTS BY SEX AND OCCUPATION

Excluding children under 10, of the 76 males, 12 were farmers and of the 95 females, 69 were housewives. The American home in this locality is a major cause of cutaneous disease, especially for the female. The incidence of dermatitis acquired in the yard—weeds, grasses, trees, shrubs, flowers, produce gardens and tending poultry—merely augments the incidence acquired inside the house from cosmetics, cleaners, polishes, insecticides, shoes, clothing and the family medicine chest. Only 9 per cent of the patients traced their dermatitis to avocational pursuits, which places dermatitis venenata due to plants in a class of dermatoses acquired accidentally while performing some necessary duty.

INCIDENCE OF ATOPY AND DERMATITIS VENENATA

There were 90 patients to whom dermatitis venenata due to plants was a new experience; 24 of these were children. One hundred and twelve patients had had previous attacks. A family history of atopy was obtained in 3 cases and a personal history in 5 cases. These data are in accord with those of Zisserman³ and Knowles and co-workers.⁴

EXPOSURE AND ETIOLOGY

One hundred and forty-two patients associated a time and place with their attack of dermatitis venenata. Some of them knew the particular plant. In 60 cases the time and place of exposure were unknown, and of the 60 patients 16 were children. The rural patients frequently spoke of "dew poisoning." Dew as it falls is innocuous but it is reasonable to expect that saturation of a plant at various stages of maturity will affect the adhesiveness, perhaps the solubility of the irritant and provide a more penetrating exposure.

A. Types of Dermatoses and Plants Responsible.—

1. The primary lesions were streaked and the etiology was confirmed by finding the Rhus in the collections of plants. There were only 40 cases in this group.

2. The primary lesions in this group were discrete and crusted, numbering from one to many. Clinically, they resembled Bockhart's impetigo, acne varioliformis, impetigo contagiosa or ecthyma. The lay diagnosis was summer, fall or touch sores. The 20 patients, 12 of

1. Underwood, G. B.; Gaul, L. E.; Collins, E., and Mosby, M.: *Practical Dermatology of the Feet*, J. A. M. A. **130**: 249 (Feb. 2) 1945.
2. Gaul, L. E.: Overtreatment Dermatitis, J. A. M. A. **127**: 439 (Feb. 24) 1945.

3. Zisserman, L.: Susceptibility to Poison Ivy Dermatitis, J. Allergy **11**: 600, 1940.
4. Knowles, F. C.; Decker, H. B.; Pratt, A. G., and Clarke, J. A., Jr.: Susceptibility of Allergic and Nonallergic Persons to Rhus Toxicodendron, Arch. Dermat. & Syph. **38**: 773 (Nov.) 1938.

whom were children, were observed during the seeding time of the grasses, particularly crab grass. Patch tests with crab grass reproduced the primary lesion. Tests at a later date were negative in result, and it seems that at a certain stage of maturity, the grass causes reaction, whereas before or after this time the irritant has been changed or is no longer present.

3. These lesions were diffuse and resembled neurodermatitis. Distributed among 29 cases were seven reactions to dog fennel, two to Indian mallow, three to tumble grass, two to hollyhock, ten to ragweed, three to goldenrod and two to horse nettle. Patch tests gave characteristic flaring reactions, indicating a high degree of sensitization. The symptoms in this group were the most severe. In the remaining 113 cases the etiology was not determined. This does not mean that reactions were not obtained, but they failed to reproduce the primary lesion and were thus considered secondary contributors. If the causative plant was tested, the behavior of its reaction pattern proved diagnostic; the selective specificity was remarkable. This explains why persons will be in contact with plants for weeks or months, but when the plant to which they are sensitive matures, then their dermatitis appears. (There were 142 cases in this group.)

B. *Detection of Plants Responsible.*—The plant oleo-resin extracts⁵ were purchased for contact testing. In spite of an obvious clinical diagnosis, the reactions in the first 6 cases were negative to all the extracts. Gradually, reactions appeared to Rhus and sumac. The twenty-third and fourth patients reacted so violently, the entire back a bullous dermatitis, that these extracts had to be removed from the test series. A total of 83 patients were tested with consistent negative results. We had to conclude that the extracts were of little diagnostic value. To prove this further, another series of 92 patients were tested with the dog fennel extract compared to the fresh plant: blossom, leaf and stem. A few patients reacted to the leaf and stem but all reacted to the blossom, which permits classifying this plant as a primary irritant. It grows abundantly, especially in farm yards. All tests to the dog fennel extract were negative in result. Reluctantly, we again had to furnish paper bags for a friend or relative of the patient to collect the fresh plants from the known or probable area of exposure.

ACUTE CUTANEOUS AND SYSTEMIC COMPLICATIONS FROM DERMATOLOGIC CHEMICALS

Deeply entrenched in the minds of people is the fear of infection. This specter haunts most channels of public information. The dictum is preached that a break in the skin permits the invasion of pathogenic organisms unless an antiseptic is applied forthwith. Laymen do not differentiate an incised wound from the breaking up of the protective barriers of the skin by contactants. The result is that all cutaneous signs, irrespective of etiology and even symptoms, are touched up with antiseptics. The chemist and bacteriologist have supplied reams of data on the test tube performances of the myriads of antiseptics, but their toxicity—their incubation period on normal and abnormal skin—has been overlooked, often wrongly interpreted as infection. As a result, all the mercurial antiseptics at least need reconsideration.

A. THE PRIMARY CUTANEOUS OVERTREATMENT REACTION

1. *History.*—The history was always the same among the overtreated patients. Cutaneous symptoms appeared

after an exposure to some plant. Itching and burning often mean infection to laymen, so as a rule these were given the "once over" with an antiseptic; and as the signs appeared, treatment was started in earnest. If a proprietary is said to help itching or to heal, people will use it for any skin condition that itches or any sign they wish to heal. A review of the indications of the remedies brought in for past-treatment patch testing disclosed that few of them were advised for dermatitis venenata due to plants. In their choice of remedies, these patients were guided by hearsay evidence and pharmacologic definitions on labels. A preparation was placed in high public esteem if it was antiseptic, germicidal, antipruritic, soothing and healing: "Nothing could beat a five in one job." One patient with the help of his wife carried in a bushel basket of remedies for the skin. Ten of them belonged to relatives and friends who knew from personal experience the salve that would get rid of the trouble.

2. *Location.*—The area of skin most frequently involved by a plant contactant became the eventual site of the primary overtreatment reaction; namely, the hand, forearm, legs, feet, face and neck.

3. *Duration.*—Dermatitis due to plants is of short duration; hours to one or several days. The overtreatment reaction was always two weeks, commonly three or four weeks and sometimes several months.

4. *Symptoms.*—Seizures of violent itching are observed from plant contactants. The symptoms from overtreatment are commonly mild or often absent. The area of skin seems stunned, as if its innervation were cut off. The systemic symptoms, however, take precedent. These patients described themselves as upset. They had not slept the way they should, their appetites were poor and their elimination sluggish. They were depressed and apprehensive about the condition of their skin.

5. *Signs.*—The area of involved skin suggests a local shocklike state. It is frequently cool to palpation, especially in the early stages. Edema is present throughout; the erythema indolent as if the capillaries had lost their powers of constriction. Vesiculation masses the area and is closely packed. Bullae are common and some hemorrhage is the rule. In the later stages, pustules appear and are a cardinal sign of overtreatment. Zoning was present to varying degrees in many of the cases. A central zone was made up of edema, erythema, vesicles and bullae with or without some hemorrhage. An intermediate zone showed little reaction, and a peripheral zone was characterized mainly by closely packed vesicles.

6. *Incubation Period.*—This is the unknown and probably the most significant factor in our knowledge of the chemistry, pharmacology, dosage and clinical indications of cutaneous therapeutic chemicals. Toxicity from drugs given orally and parenterally is constantly looked for; physicians have been on the alert, but toxicity from dermatologic chemicals has been for the most part unrecognized or called something else.

(a) *Simple Therapeutic Chemicals:* Simple therapeutic chemicals were encountered most commonly among the mercurial antiseptics. The incubation period followed a sequence and was conditioned by the number of exposures, the duration of the exposure and the chemical formula of the therapeutic agent. The determinate factor was the integrity of the protective barriers of the skin; namely the pH, lipid film and the horny mantle. To illustrate the importance of these barriers, 82 postoperative patients were given patch tests⁶ with

5. Graham Laboratories, Willow Lane, Dallas, Texas.

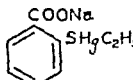
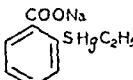
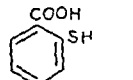
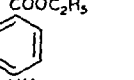
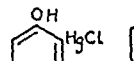
6. We were enabled by Dr. Paul Crimm to test 40 patients from Boehne Tuberculosis Hospital.

three to six different mercurial antiseptics. The patients had been exposed to "merthiolate" at least once and some of them two or three times. They never had had any skin trouble and the surgical incisions healed promptly. All patch tests were negative in result. When the protective barriers had been broken up by a plant irritant, the application of "merthiolate" to this injured skin induced the primary overtreatment reaction and systemic signs of sensitization. Patch tests performed on 187 patients showed that 66 of them had become sensitive, an incidence of 35 per cent. The time factor of the incubation period varied from hours to several days or a week or longer. The history of the patients with a short incubation period revealed past exposures to "merthiolate," especially for treatment of previous attacks of dermatitis contact. These patients noted an immediate flare up—less than twenty-four hours—on applying "merthiolate" to the area affected by dermatitis venenata due to plants, and their reactions to patch tests appeared early, hours to one day. The history in the cases with a long incubation period—a week or more

the splitting off of the mercury in "merthiolate" or they may reflect mercurial exposures from amalgam fillings or past treatments. The single ring of "merthiolate" may have conditioned the reactions to thiosalicylic acid which were grouped with aqueous "merthiolate" seventeen times and the tincture four times. We are unable to explain the single reactions. Perhaps, a history of all therapeutic chemical exposures in these patients, oral, parenteral and topical, might disclose an explanation. We believe that dermatologic chemicals having a single ring are good epidermal penetrants and probably should be so classified.

The reactions to ethyl aminobenzoate always disclosed a present treatment contact. This chemical ranks with "merthiolate" in sensitizing powers. An opportunity was presented to perform intradermal tests with a solution of procaine 1 per cent, in 6 cases of sensitivity to ethyl amino-benzoate after the local and systemic signs began to subside. The tests were done on the flexor surface of the forearm. In 4 cases a flare response of the entire flexor surface of the arm appeared. In the remaining 2

TABLE 1.—The Incidence of Patch Test Reactions to Therapeutic Chemicals

Chemicals Formula	A Mercury Bichloride Hg-Cl -Cl	B "Merthiolate," Aqueous COONa $\text{SHR C}_2\text{H}_5$	C "Merthiolate," Tincture COONa $\text{SHR C}_2\text{H}_5$	D Thiosalicylic Acid COOH SH	E Ethyl Amino- benzoate COOC_2H_5 NH_2	F Ammoniated mercury Hg Cl NH_2	G "Mereresin" OH Hg Cl and Pentaresol	H "Metaphen" CH_3 O Na Hg OH NO_2
								
Percent Vehicle	0.1 aqueous	0.1 aqueous	0.1 alcohol	0.1 alcohol	5 petrolatum	5 petrolatum	0.1 alcohol	0.5 alcohol
Number tested	202	187	46	58	24	18	15	6
Single reactions	7	12	1	5	8	0	1	0
Group reactions with	A. 47 B. 23 C. 10 D. 9 E. 9 F. 12 G. 6 H. 2	...B. 54 A. 23 C. 14 D. 17 E. 13 F. 11 G. 6 H. 4	...C. 17 A. 10 B. 14 D. 4 E. 3 F. 4 G. 2 H. 2	...D. 21 A. 9 B. 17 C. 4 E. 7 F. 2 G. 1 H. 1	...E. 16 A. 9 B. 13 C. 3 D. 7 F. 0 G. 2 H. 2	...F. 15 A. 12 B. 11 C. 4 D. 2 E. 0 G. 1 H. 2	...G. 9 A. 6 B. 6 C. 2 D. 1 E. 2 F. 1 H. 3	...H. 6 A. 2 B. 4 C. 2 D. 1 E. 2 F. 2 G. 3

—revealed past exposures of normal skin to "merthiolate," insect bites and trivial traumas. The application of "merthiolate" to the area currently affected by dermatitis did not produce a flare-up for a week or more. Patch tests before the flare-up were usually negative in result, whereas after the flare-up they may be positive and frequently are, if "merthiolate" was reapplied to the area of flare-up. There was evidence in these cases that the incubation period at the site of exposure to "merthiolate" was reflected in the time for the patch tests to become positive in result; the longer the incubation period the greater the likelihood of delayed reactions in patch tests. The appearance of pustules after exposure to "merthiolate" almost permits predicting a positive reaction in a patch test.

The incidence of reactions to therapeutic chemicals in patch tests is shown in table 1. "Merthiolate" had the highest exposure ratio, which explains why it should show the greatest incidence of reactions. It seems that this chemical carries two sensitizing factors; the mercury ion and the single ring structure. The reactions to mercuric bichloride were probably conditioned by

cases, flare reactions about 4 cm. in diameter were observed. At the point of injection, a ring of erythema persisted several days and the area involved by pustulation. The duration of the sensitivity to ethyl amino-benzoate is not known, but it is possible that the wide use of this chemical on the skin can predispose to violent systemic reactions when procaine might be used as a local anesthetic. Goodman⁷ presented data that in the procaine group of local anesthetics, the sensitivity was directed to the substituted aniline base, para-amino-benzoyl.

Among the patients reacting to ammoniated mercury, 6, by chance, were observed with a faint erythema spreading peripherally from the site of treatment. The diameters varied from 4 to 18 cm. Patch tests on the arm elicited a reaction of about 1 plus, but in the area of erythema it was 4 plus. Several days later the reaction on the arm became 4 plus. We may have observed the spreading of sensitization through the skin by way of the superficial nerve or vascular structures. Perhaps

7. Goodman, M. H.: Cutaneous Hypersensitivity to the Procaine Anesthetics, *J. Invest. Dermat.* 2: 53, 1939.

the designation toxicity would be better than sensitization. Ammoniated mercury produced no single reactions but grouped with mercuric chloride and "merthiolate" to a sufficient degree to prompt common ion participation.

While statistically the reactions to "mercesin" (amyltricrosols and orthohydroxyphenylmercuric chloride) and nitro mersol ("metaphen") are insignificant; we believe, if their incidence of exposure approached that of "merthiolate," these antiseptics would behave similarly. The degree of dilution of the mercurial makes little difference because, as the repetition and duration of the cutaneous exposure increase, the likelihood of sensitization also increase. It is common to obtain reactions to mercury in dilutions of 1:1,000,000. The group reactions would suggest that one chemical in sensitizing the skin predisposes a reaction to other related chemicals. The chemicals producing reactions in patch tests always had an immediate past or present therapeutic contact. This high specificity was remarkable. It supports the conclusions of Rostenberg and Kanof⁸ and interestingly adds emphasis to the "cutaneous memory" observations of Sulzberger.⁹ If the memory of the skin for treatment chemicals is ever analyzed, the renaissance in dermatology will come about almost over night. Many textbooks will become historical references. It is clear, also, that the tendency of manufacturers to copy formulas is causing a "cross firing" to occur on the skin. The chemical in one formula produces the exposure; the same chemical in another formula initiates the sensitization reaction. The latter is blamed, but in reality the former is the real culprit.

These data are in agreement with previous investigations in this field. The skin was exposed to simple chemicals which on fulfillment of the incubation requirements caused sensitization in some of the cases. It is, we believe, highly significant that the chemicals studied: "orthoform,"¹⁰ "mesothan"¹¹ (methoxymethyl salicylate), paraphenylendiamine,¹² phenylhydrazine,¹³ dinitrochlorobenzene,¹⁴ trinitrophenol and butesin,¹⁵ were all single ring compounds. Adding emphasis are the investigations that the sensitizing substance in Rhus is also a single ring compound.¹⁶ From our data, we conclude that the repetition and duration of exposure to certain therapeutic chemicals will cause the incidence of generalized sensitization to increase. A present flaw in dermatology is the treatment of dermatitis caused by a chemical contactant with therapeutic chemicals having comparable irritating or sensitizing powers.

(b). Dermatologic Proprieties and Prescriptions: Reactions to past-treatment patch tests were obtained to 62 proprietaries and 226 prescriptions. When it was

possible to identify the latter, they were as a rule some proprietary devoid of all identification except the admonition, "Rub into the affected area as often as necessary." Usually it was one, sometimes two and rarely three chemicals in the proprietary that caused reactions. These chemicals had produced a flare-up of the dermatitis and, as often as not, the prescription contained the same chemicals. This abuse is widespread and is comparable to prescribing a laxative containing phenolphthalein to a patient having a phenolphthalein dermatitis. An observation which has become almost a therapeutic law with us is that if a particular remedy seemed to help at first, the continued use of it will sooner or later cause an exacerbation of the dermatitis. The overtreated patients with recurrent attacks of dermatitis due to plants pointed out in their collections preparation after preparation which for the first attack worked wonders but when used for a second attack made the dermatitis worse. The period of time that the remedy was credited as helping was also the incubation time for certain chemicals in the formula. When the latter was satisfied, the next exposure produced a sensitization reaction. The foregoing statement presupposes that the dermatitis venenata involved the same area of skin at the time of the second attack. Pages of the following example could be cited.

A patient had dermatitis venenata involving the forearms two years ago. "Mazon" a combination of phenolic substances and organic mercury c. was applied and the dermatitis promptly cleared. This year the patient had another attack; again the forearms were involved. "Mazon" was used for one week, when suddenly the dermatitis flared. The exposure 2 years ago met the incubation requirements of the mercury salicylate in "Mazon," and its second application proved to be the sensitizing dose.

7. Etiology: The past treatment patch test investigations have brought out the critical importance of the protective barriers of the skin. A chemical outside these barriers has its toxic properties in a different category than when inside where it can affect living tissue. The evidence in the cases of overtreatment offers little support for the concept that these patients were allergic, had an idiosyncrasy or were hypersensitive. The primary overtreatment reaction was basically a manifestation of the toxicity of certain therapeutic chemicals. From our data, the chemicals in table 2, are unsafe for self treatment of dermatitis venenata due to plants.

8. Care and Management.—The cases of dermatitis venenata due to plants were not observed at the time of exposure to the plant irritant. The properly treated patients were seen one to three days, even a week after their exposure, and the improperly treated patients a week to several weeks or months. Therefore, it seemed foolish to do anything directed at the plant irritant. It had already struck. We observed the symptoms which relayed the location and warned the patient of danger. We noted the signs—edema, erythema, vesicles, bullae and weeping—measures which the skin takes to prevent absorption and dissemination to neutralize and eject the irritant. The control of symptoms in these cases presented no problem. We told the patients to scratch as often and as much as they desired. Many of them heaved a sigh of relief and quizzically countered, "I am glad you said that because I couldn't help doing it anyway." We have never observed a skin which we could prove had been injured by scratching or a dermatitis that had been made worse by scratching.

(a). The Primary Overtreatment Reaction: On inspection the lesions appeared grossly infected. They

8. Rostenberg, A., Jr., and Kanof, N. M.: Studies on Eczematous Sensitization, *J. Invest. Dermat.*, 8: 201, 1945.

9. Sulzberger, M. B.: Dermatologic Allergy, Springfield, Ill., Charles C. Thomas, Publisher, 1940, p. 25.

10. Schwarzschild, L., cited by Silverberg.¹¹

11. Silverberg, M. G.: The Sensitization of the Skin to Mesothan, *Arch. Dermat. & Syph.*, 21: 166 (Feb.) 1930.

12. Mayer, R. L., cited by Sulzberger,⁹ p. 380.

13. Jadassohn, W., cited by Sulzberger,⁹ p. 33.

14. Landsteiner, K., and Jacobs, J.: Studies on Sensitization of Animals with Simple Chemical Compounds, *J. Exper. Med.*, 61: 643, 1935.

15. Wedroff, N. S., and Dolgoff, A. P., cited by Sulzberger.⁹

16. Relationship Between Chemical Structure and Properties and Sensitizing Capacities in the Production of Eczematous Sensitivity in Man, *J. Invest. Dermat.*, 1: 45, 1938.

Sulzberger, M. B., and Baer, R. L.: Sensitization to Simple Chemicals: III. Relationship Between Chemical Structure and Properties and Sensitizing Capacities in the Production of Eczematous Sensitivity in Man, *J. Invest. Dermat.*, 1: 45, 1938.

Sulzberger, M. B., and Rostenberg, A., Jr.: Acquired Specific Supersensitivity to Simple Chemicals: IV. A Method of Experimental Sensitization and Demonstration of Increased Susceptibility in Individuals with Eczematous Dermatitis of Contact, *Immunol.*, 36: 17, 1939.

15. Sulzberger, M. B., and Wise, F.: Drug Eruptions: II. Dermatitis Eczematosa Due to Drugs, *Arch. Dermat. & Syph.*, 28: 461, (Oct.) 1933.

16. Dawson, C. R.; Wasserman, D., and Keil, H.: The Relation of Hypersensitivity to Poison Ivy and to Cashew Nut Shell Liquid, *Science*, 102: 279, 1945.

Mason, H. S., and Schwartz, L.: The Toxic Principles of Poison Ivy, *J. Am. Chem. Soc.*, 64: 3058, 1942.

swarmed with the usual skin bacterial flora. Where the bacteria flourished, many different antiseptics had been and were residing. The deeper the antiseptics penetrated the living skin the greater the weeping, dripping and pustulation. The latter were considered drainage manifestations.

TABLE 2.—*Chemicals Unsafe for Self Treatment of Dermatitis Venenata Due to Plants**

Tars and Derivatives	Metallic Compounds	Plant Products	Alcohols
Butesin pterate... 2	Ammoniated mercury... 15	Absinthin, Menthol, Echinacea, Calendula... 4	Solution formaldehyde... 3
Ethyl aminobenzoate... 24	Copper sulfate... 1	Grindelia... 4	
Hydroxyquinoline sulfate... 6	Ferric chloride... 1	Juniper tar... 5	
Hexyl-m-cresol... 4	"Mercurin"... 10	Methyl salicylate... 8	
Nupercaine hydrochloride... 2	"Metaphen"... 6	Pine tar... 6	
Phenol and Cresols... 22	"Mercuriochrome"... 2	Tannic acid... 3	
Resorcin... 3	Orthochloro-mercuriphenol... 4		
Salicylic acid... 8	Potassium mercuric iodide... 3		
Tars, decolorized... 14	Phenylmercurio nitrate... 6		

* The number after each chemical indicates the number of patients that showed positive reaction in patch tests. It seems incredible that plant extracts were ever indicated for therapy of plant dermatoses.

† Two proprietaries showed reactions, but the separate ingredients were negative. Apparently oxidation of hydroxyquinoline can produce a sensitizer.

‡ Proprietaries containing these chemicals had been in the household a long time. We suspect that ageing produced a sensitizer in them.

§ This chemical was in the proprietaries which were essentially Whitfield's ointment. The proprietary elicited a positive reaction but the separate ingredients a negative one. The preparations were all over a year old. We suspected an oxidation or reaction product with salicylic acid.

(1) Drainage phase.—The drainage phase was encouraged by saline compresses or poultices (boiled oatmeal or cream of wheat). The drainage was most profuse in the central zone, and in this region healing appeared first. As the pustules finished draining, bleeding often occurred in their bases which soon formed dry crusts. Healing was now rapid in and around the old pustules. Drainage was promoted twelve to twenty-four hours. Then the affected area was bathed with water and covered with cotton. If weeping and pustules reappeared, poultices were again applied, and this procedure was continued until the area remained dry.

(2) Drying phase.—The peripheral area where the uninvolved meets the involved skin takes the longest to heal. Frequently minute pustules appear before the healing ensues. During this phase the skin is kept covered with cotton, which has a splinting action, and this is enhanced by leaving in place scabs, crusts and scales. When regeneration and repair have proceeded far enough exfoliation appears; then the cotton protection is removed.

(3) Erythema of involution.—After exfoliation a faint erythema usually persists several weeks or even a month. The appearance throughout this area of pinpoint vesicles and pustules has been a constant observation. We interpret these signs as the regeneration stage of the ducts of the cutaneous glands. Dermatitis naturally disrupts the duct system, and the secretions of the cutaneous glands play an important part in freeing the skin of irritants. It is a rule in medicine that obstruction of free drainage leads to formation of pus and that the removal of the obstruction causes the former to resolve. This rule is a vital part of the care and management of the skin.

(b.) Generalized Dermatitis: Patients with generalized dermatitis were directed to a supply of all cotton pajamas, gloves and socks, to be boiled in plain water and dried. A bath was taken to which had been added 2 cups of oatmeal or cream of wheat boiled to make a gruel which served to free the skin of irritants and

promote drainage. Often a colloidal clay lotion was prescribed to satisfy the "put something on it impulse." The skin was kept incased in cotton until exfoliation occurred. Scratching was permitted. A diet high in calories was advocated, with hourly feeding for those patients with severe symptoms. We have found that a full stomach controls cutaneous symptoms better than sedatives or antipruritics. The routine laboratory examinations often showed a need for iron which was prescribed for many of these patients.

The success in the care and management, especially of the patients with acute overtreatment complications,



Fig. 1.—Cresol intoxication, with the primary overtreatment reaction on the chin and the secondary manifestation, toxic or sensitization ids.

has instilled into us a deep respect for the healing and regenerative powers of the skin, a remarkable ability to recover from the severest of insults. Opening the pajamas, peering under the gloves, socks and dressings taught us the value of splinting the skin, the immobilization of it in the healing process. To us, scabs, dried crusts and scales are natural splints, and these were not molested, nor were pustules or bullae opened. We believe that an error has long been made of giving a dermatologic remedy credit instead of recognizing the inherent healing capacity of the skin.

B. SECONDARY MANIFESTATIONS OF THE PRIMARY OVERTREATMENT REACTION

1. *Toxic or Sensitization "Ids."*—The ids were observed at either of two stages of the primary overtreatment reaction, the drainage phase or the drying phase. Sudden and intense pruritus generalized in character usually preceded their appearance. The atopic skin areas seemed especially predisposed. They appeared as showers of vesicles; some were evanescent, whereas others were more persistent with associated erythema which soon changed into a patchy dermatitis. The palms and soles always participated, but here the vesicles were deep seated. The toxic ids were observed in 39 patients. The reactions to past treatment patch tests were violent; each case displayed a flare type. A skin with an id

reaction is the most irritable skin that we have observed. All the patients reacted to one or more of the single ring organic mercurials, 4 patients to a proprietary containing ethyl aminobenzoate and hexylm-cresol and 7 to proprietaries containing phenol or cresols.

REPORT OF A TYPICAL CASE.—P. G., was a white farm girl, aged 14, who had had attacks of Rhus dermatitis for eight summers. After helping her father repair a fence, she noticed that her chin itched. It became red, and soon little water blisters appeared. In the family medicine chest were remedies good for itching and healing. The mother applied "unguentine"; no relief, so petroleum, without relief. Then "wonder salve" was tried, and finally her father remembered an old prescription in the garage that had cured his toe itch. This too was applied. A few days of this treatment and the chin looked worse. It oozed a yellowish serum which was diagnosed by the family as impetigo; infection had finally set in. A neighbor, learning of this, hastened to advise a remedy that was a sure cure. All one had to do was follow the directions on the label, 1 teaspoonful of "sheep-dip" to a pint of water, then bathe the affected parts freely. The mother did this, sopping it on plentifully to make sure that the terrible germs were killed. Instead of getting better,



Fig. 2.—Appearance twenty days later, after care and management. the chin wept profusely; so it was bathed again. By the next morning, it was dripping a watery fluid; and to the horror of the family, the girl had broken out all over (fig. 1). The chin shows the primary cutaneous overtreatment reaction. Here the skin had been actually cooked. The toxic ids were present as superficial, discrete, noninflammatory vesicles; others were grouped, became erythematous, then pustular with final crusting. This patient could not open her mouth; her eyes were sealed shut. The uninvolved skin showed a light olive green color which we consider a sign of systemic intoxication, a mild shock-like state. The legs and feet were free of lesions.

The rectal temperature was 101 F. Lymph nodes were palpable in the anterior cervical region and in the axillas. The reflexes were hyperactive. A physical examination was otherwise not unusual in result. The blood pressure was 100 systolic and 60 diastolic, the pulse rate 125, the hemoglobin 12 Gm., the red blood cells 4,500,000, the leukocytes 19,500 and the differential count not remarkable. The urine showed an albumin (2 plus) with 50 leukocytes per low power field.

A diagnosis of cresol intoxication was made. Aside from the usual supportive care, the management of the skin centered about the promotion of drainage of the chin area and protection for the rest of the skin. Patch tests were done ten days later. All the remedies used elicited negative reactions except an organic mercurial (1 plus) and the "sheep-dip," which in the recommended dilution caused vesicles and pustules at the testing site. Within twenty-four hours the chin showed erythema, and showers of vesicles appeared on the legs and soles. It required twenty days for this patient to get well; at which time figure 2 was taken. The label on the "sheep-dip" said it was good for man and beast.

2. *Toxic Lymphangitis with Adenopathy.*—The inclusion of these 16 patients, all of whom had been referred, as examples of therapeutic chemical intoxication was decided on when past therapies seemingly had failed. Penicillin had been administered in 8 cases, 1 patient receiving a total of 3,000,000 units. There were 2 patients receiving penicillin at the time of consultation. The remaining 6 had had courses of sulfathiazole. The primary overtreatment reaction had been painted and smeared with the whole gamut of antiseptics, fungicides and germicides. The running together of pustules and antiseptics was a constant observation.

The upper or the lower extremity was always involved; both soles, 2 cases; right sole, 6 cases; left sole, 2 cases; the palms, 2 cases; left palm, 2 cases, and the right palm, 2 cases. At the initial observation, the affected palm or sole displayed a weeping dermatitis, in some cases so severe that dripping occurred. The hand or foot felt cool to palpation; the indolent clamminess attracted attention. The complexion was light olive color, which to a more or less degree involved the entire skin. Even in hot weather these patients complained of being cold. They described how they felt as "awful" and they are depressed and suffer from nervous exhaustion. In this series of cases, this stage prevailed only a day or so, when suddenly something let go. The temperature rose, the highest in the series being 102 F.; the leukocytes increased, the highest count being 20,500; albumin appeared in the urine in some, a trace to 2 plus; the olive color gave way to mild flushing; the weeping of the primary overtreatment reaction ceased, and showers of new pustules appeared. The affected palm or sole was now hot to palpation. Lymphangitis streaked up the flexor surface of the arm or leg with tenderness along the medial distal insertion of the biceps, in the axilla under the midportion of the pectoralis major or in the groin if the sole was involved. All the pustules soon ruptured, a yellowish-tinged serum poured forth and the systemic manifestations subsided as abruptly as they appeared. The temperature was back to normal in less than twenty-four hours. The patients were now in good spirits, as if the systemic reaction which prompted a profuse drainage had gotten rid of something that was poisoning them.

The reactions to past treatment patch tests disclosed that all these patients reacted to one or more of the organic mercurials; 6 patients also reacted to ethyl aminobenzoate and 7 to proprietaries containing phenol or cresols.

C. GENERALIZED DERMATITIS

The 29 patients having generalized dermatitis were classic examples of the toxicity of dermatologic remedies. They had converted a simple dermatitis venenata due to plants into a primary overtreatment reaction which caused seizures of generalized itching. These patients erroneously believed that the dermatitis was spreading and took measures to prevent it. Often the same remedy was applied over the entire skin that had caused the primary overtreatment reaction. It is obvious that this group accounted for the 9 patients hospitalized not because of the severity of the dermatitis but because of the severity of the symptoms. Chemicals purported to allay itching reversed themselves and caused intense itching.

Ethyl aminobenzoate elicited positive reactions in patch tests in 7 cases; one or more of the mercurials in 6 cases; grindelia in 6 cases; a proprietary containing tannic acid in 3 cases, butesin picrate in 2 cases, and dibucaine hydrochloride in 2 cases. A generalized follicular gangrene followed the application of copper sulfate in 2 cases and a solution of formaldehyde in 1 case. (This last patient stated that she read in *Reader's Digest* "that fungi can spread over the whole body," and she knew that the itching was due to the fungi biting her so she added a solution of formaldehyde to the bath which she had read would kill fungi.)

comment, "You know I'm very nervous." When they were asked whether their nervous systems had been examined or tested there followed a puzzled expression and the answer, "No." It seems incredible that these guessed at "nerve diagnoses" are on the increase just when the "too much acid" diagnoses are on the decrease. The nervous condition in these patients disappeared when the plant and therapeutic chemical contactants were removed and the skin was given a chance to resume its normal functions.

E. ADVERSE REACTIONS FROM RHUS EXTRACTS

Among the improperly treated patients were 24 who had received one to four injections of various brands of Rhus extracts for the relief of symptoms and treatment of the dermatitis. Of these, only 9 had clinical evidence of Rhus dermatitis; in 6 a weed or grass was the cause and in 9 the offender was unknown. Apparently these "shots" are given hit or miss for any or all dermatoses that itch during the summer. Instead of relieving symptoms and involuting the dermatitis, the injections intensified the symptoms and made the dermatitis worse. Eight patients complained of severe generalized itching; in 4 urticaria developed, of the giant type in 1 case. In 1 patient a universal erythrodermia developed with subsequent exfoliation. Seven patients noted a generalized patch dermatitis. Four patients showed a derma-

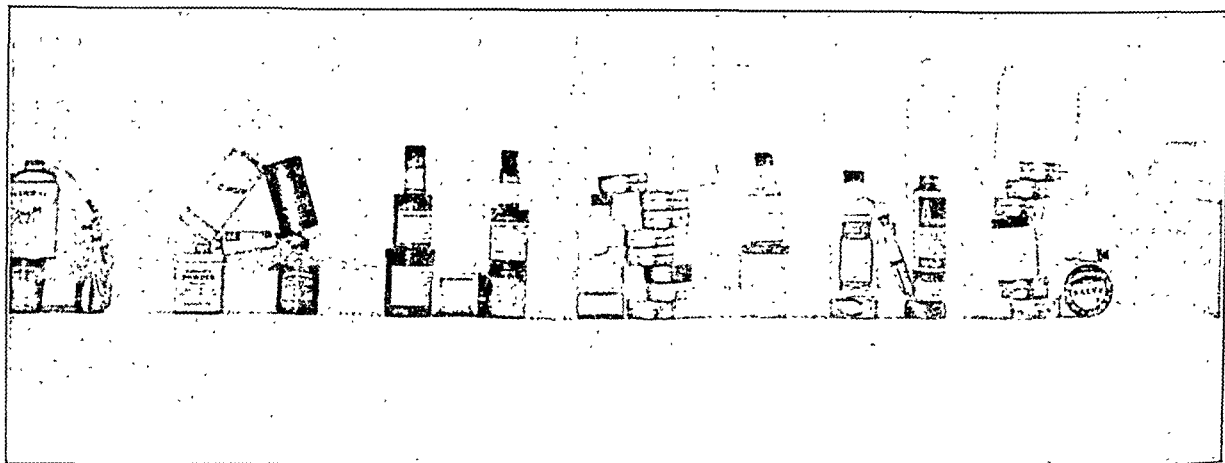


Fig. 3.—The cause of residual dermatitis, daubing.

D. NEUROLOGIC MANIFESTATIONS

Overlooked or not appreciated is the fact that the skin is an organ of special sense whose afferent and efferent stimuli are integrated with the body economy. Cutaneous symptoms with or without the advent of signs cause a psychic response exactly like a throbbing tooth, an aching ear, a pain in the chest or abdomen. Among the 50 patients with plant dermatitis properly cared for, there was a minimum of worry; but among the 152 improperly cared for, there were indications of psychic upsets. The spreading of dermatitis, especially near the eyes, the sudden appearance of lesions all over the body, or aggravation of the initial dermatitis struck fear and panic into these patients with resulting disruption of their normal living, sleeping, eating, pleasures and habits. The specter of overwhelming infection or some fatal disease hung over their thoughts, and when relief was not forthcoming—their family physician was baffled—they sank deeper and deeper into abject misery and nervous exhaustion. In this series 63 patients interrupted the history and asked whether their nerves were not the cause of their skin trouble. They added the

titis at previous sites of plant dermatitis and a profuse weeping at the present site. Aside from this group, there were 8 patients who had had injections of Rhus in previous seasons. One of these had received a total of forty treatments; yet no protection was afforded.

During the spring of 1946, we received leaflets describing the indications for thirteen different brands of Rhus extracts. In addition, we saw many advertisements in medical journals urging their use and extolling their specificity. A review of the leaflets brought out the range of confusion of dosage and time of administration. While such pieces of advertising are usually so up to date that unpublished investigations are referred to, the references in these leaflets were for the most part ten or more years old. Only one leaflet mentioned an unfavorable report, in spite of the fact that Krause and Weidman,¹⁷ Templeton,¹⁸ Zisserman and Birch,¹⁹

17. Krause, G. L., and Weidman, F. D.: Ivy Poisoning: Preventive Treatment with Special Reference to Individual Susceptibility, *J. A. M. A.* 84: 1996 (June 27) 1925.

18. Templeton, H. J.: Untoward Reactions Following Toxin Treatment for Dermatitis Venenata, *Arch. Dermat. & Syph.* 20: 83, 1929.

19. Zisserman, L., and Birch, L.: Prophylaxis and Treatment of Poison Ivy Dermatitis with Extract of Rhus Toxicodendron, *J. Allergy* 10: 596, 1939.

Simon and Lotspeich,²⁰ Shelmire,²¹ Sompayrac²² and Howell²³ found these extracts of no or questionable value. We do not use such extracts, consider them dangerous and believe additional studies are required to prove their value and lack of toxicity. Stevens²⁴ stated that the treatment of the acute rash with ivy extracts should be discouraged because the condition of many patients is made worse and there is no satisfactory evidence that any are helped.

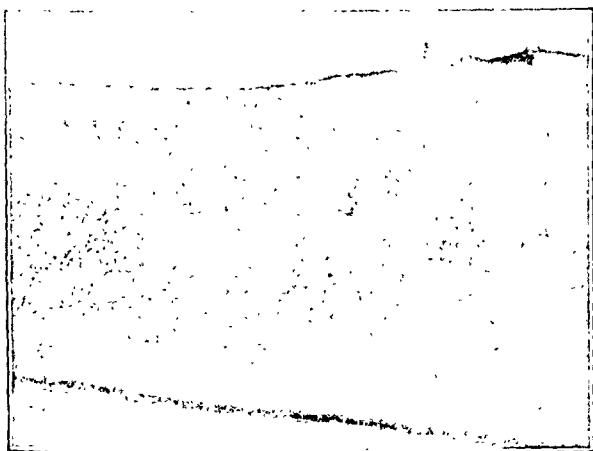


Fig. 4.—The clinical appearance of keratosis from decolorized tars, left forearm, extensor surface.

CHRONIC CUTANEOUS COMPLICATIONS FROM DERMATOLOGIC REMEDIES

An integral part of our dermatologic histories concerns past and present exposures of the skin to therapeutic chemicals. The number of patients who have noted the onset of dermatitis during or after a period

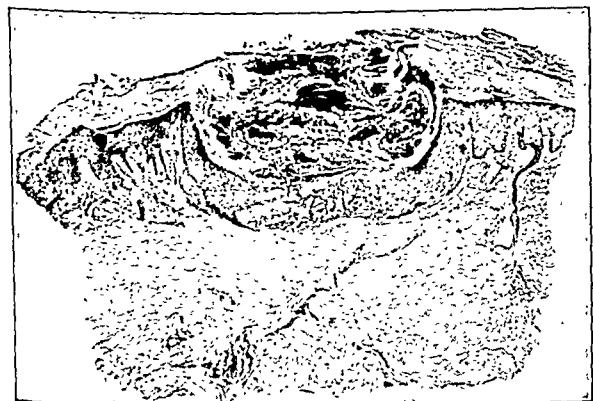


Fig. 5.—Histologic structure of keratosis when about three weeks old.

of hospitalization are on the increase. Tracing such exposures to antiseptics, particularly surgical and traumatic cases, may reveal the cause of the dermatitis or explain an exacerbation. Another common observation is the onset of dermatitis following trivial scratches, cuts or burns. A review of the chemicals applied may explain an acute, chronic or recurrent dermatitis. These etiologic factors are frequently overlooked and the resulting dermatitis diagnosed as something else.

20. Simon, F. A., and Lotspeich, E.: Observation on Sensitivity to Poison Ivy, *J. Invest. Dermat.* 2: 143, 1939.
21. Shelmire, B.: Cutaneous and Systemic Reactions Observed During Oral Poison Ivy Therapy, *J. Allergy* 12: 252, 1941.
22. Sompayrac, L. M.: Negative Results of Rhus Antigen Treatment of Experimental Ivy Poisoning, *Am. J. M. Sc.* 195: 361, 1938.
23. Howell, J. B.: Evaluation of Measures for Prevention of Ivy Dermatitis, *Arch. Dermat. & Syph.* 48: 373, (Oct.) 1943.
24. Stevens, F. A.: Status of Poison Ivy Extracts, *J. A. M. A.* 127: 912, (April 7) 1945.

A. FURUNCULOSIS

To allay concern on the part of patients with a severe primary overtreatment reaction, especially those with generalized dermatitis from therapeutic chemicals, they are told to expect crops of furuncles. There were 16 patients on whom they developed after the primary overtreatment reaction had involuted. Another 7 had them after their generalized dermatitis had subsided. The furuncles appeared suddenly, drained within twenty-four hours when poulticed and healed promptly.



Fig. 6.—The histologic structure of a keratosis about six weeks old.

We interpreted them as excretory reactions, the re-establishing of the glandular functions of the skin.

B. PIGMENTATION

Three patients had irregular, brownish black blotches of pigmentation which appeared after use of a remedy containing ferric chloride for plant dermatitis. The discolorations were located on the right leg, thigh and forearm respectively. Weiss and co-workers²⁵ reviewed the literature, recording 11 cases, and recommended that iron salts should not be used in the treatment of dermatitis venenata due to plants.

C. RESIDUAL DERMATITIS

The residual dermatitis was recognized when observed in 31 patients. It was disconcerting to view these patients with acute plant dermatitis, and then to learn that the site of their chronic dermatitis was originally the site of dermatitis venenata due to plants which following the use of dermatologic remedies "did not get well as it should." There were 20 women and 11 men, all of whom were in the fourth to sixth decades of life. The duration varied from one to seven years. The location was the lower third of the right leg, 14 cases; both legs, lower third, 8 cases; both hands, 2 cases; left forearm, 2 cases; neck, 2 cases; ears, 1 case, and the lower third of the left leg, 2 cases.

The past-treatment patch tests elicited positive reactions to one or more of the mercurials in 24 cases, proprietaries containing decolorized tars 8 cases, methyl salicylate 8 cases, pine tar 6 cases, juniper tar 5 cases and resorcinol 3 cases.

REPORT OF A TYPICAL CASE.—A. B., a white man aged 43, a mine electrician, purchased a home in the country where the family budget could be supplemented by garden and dairy produce. During the late summer he acquired a dermatitis of the feet and legs. To him the itching and little water blisters warned of a fungous infection. There were many remedies at the corner drug store, so the fungus killing was started. After four or five of these had been tried with the dermatitis getting steadily worse, physicians were visited one after another. Over a period of one year, fifteen were consulted, of whom four were dermatologists. Roentgen therapy had been used to tolerance. Coinciding with the time of the first appearance of the dermatitis, another attack

25. Weiss, R. S.; Conrad, A. H., and Conrad, A. H., Jr.: Tattoo Type Blemishes Following Use of Iron Salts in Treatment of Rhus Dermatitis, *Arch. Dermat. & Syph.* 43: 650, (April) 1941.

Safe for Skin!

Supplemental Treatment

relieved
with this Modern Treatment

Testimonial meeting

Write for Generous Sample

FOR ITCHING AND IRRITATED SKIN

NOW RELIEVE

Pruritus
OUT TO

for COMBATING SUMMER'S SCOURGES

PRESCRIBE

for ITCHING!
hastens healing

A Message to Sufferers From Itching Skin

Safe Relief

Ask for this Bottle

Stop! Itching!

OUCH!
THAT'S THE SIGNAL TO USE

Proves Wonderful For Itching Skin!

FAST RELIEF

THOROUGHLY

WHO SAYS IT'S A
MUCK IRRITATION?

Greatly Shortens Healing Time

For this relief... much thanks!

IN THE TREATMENT OF SKIN IRRITATIONS

ITCHY PRICKLING?
Get fast relief!

Tortured by an ITCH?

Eczemas

FREE SAMPLE

Check That Itching

TESTIMONIALS

EXCERPTS FROM CLINICAL REPORTS:

Satisfactory Clinical Improvement in 114 Cases Out of 116 Cases

98.3%

Medications of Choice
FOR THE SPECIFIC INVOLVEMENT

PRURITUS

scratching..

RELIEVES
ITCHING LOCAL PALE CONGESTION

for Itching, Irritative Skin Conditions

SKIN LESIONS

Triple action in SKIN THERAPY

PROOF! Actual Photographs Show Remarkable Benefits of

5 Minute Relief For Itchy Skin Or Remedy free

Hits The Spot When You Itch

'INVISIBLE' LIQUID

SKIN RASPS

Three-Fold Action In Relieving ITCH IRRITATION

The Fast Stop

Prevents Infection

Never neglect a knee scratch

WARD OFF INFECTION ALLEYS PAIN PROMOTE HEALING

Ditch that Itch!
Ease Perspiring BURNING FEET and MIND SKIN IRRITATIONS GET QUICK RELIEF

Relieved Or No Pay!

PROLONGED ANTISEPTIC ACTION

NO NEED FOR DIFFERENTIAL DIAGNOSIS

Fig. 7.—The advertiser's appeal for treatment of symptoms.

occurred. This time the thighs, hands and forearms also were involved. Patch tests with suspected plants showed dogfennel, growing plentifully over the property, to be a strong sensitizer. This patient on moving to the country acquired a dermatitis venenata which he wrongly diagnosed and thus wrongly treated. From remedies he altered the signs and converted acute dermatitis into chronic. He brought in for past treatment patch testing, sixty-two different remedies, some of which are shown in figure 3, which portrays the treatment received, namely "daub-

ing." The latter cost this patient over \$3,000. Patch tests elicited positive reactions to twelve remedies and the mercurials.

D. KERATOSES

Keratosis were not recognized until the third case had been noted. They were observed on the forearms in 4 cases and on the lower third of the legs in 2 cases. Each patient had applied a decolorized tar several weeks to a month or more to an acute overtreatment reaction. As the latter subsided, tumors measuring 4 to 6 mm. in diameter were observed at the probable sites of

old pustules. Early in the development they were soft to palpation but on aging became firm. The entire surface showed a fine scaling. After tar therapy was stopped, they disappeared slowly, requiring one to two months. The clinical appearance of the keratoses is shown in figure 4. The lesions were about three weeks old and their histology is shown in figure 5. The change that takes place with aging is shown in figure 6. This section was obtained from another case; the lesions were about six weeks old.

E. DERMATITIS PEDIS

The fashion of wearing footwear designed like sandals with the feet stockingless accounts for the 38 patients who had a concurrent attack of dermatitis venenata on their feet. To most people anything below the ankle that itches is a fungous infection. School children tell us about the fungi biting their toes. Only 7 patients had properly treated their dermatitis, and the

not satisfactory, he relies on the advice of relatives or friends who make snappy diagnoses and advocate absurd treatments. Persons who mistreat their skin are blameless. They are victims of false and misleading information as were persons several decades ago who swallowed various potions to cure their miseries. Knowledge about the care of the skin is so backward that it countenances attempts to tan the skin in the living state with chemicals disguised as remedies.

B. THE TREATMENT OF SYMPTOMS

If one can read or hear these days, to get relief from cutaneous symptoms is as simple as buying a remedy. The eye catchers in figure 7, were clipped from advertisements in "free" medical periodicals, certain state medical journals whose advertising must compete with the former and the monthly avalanche of professional mailing pieces; only a few were from newspapers and magazines. It is clear that the indications for applying

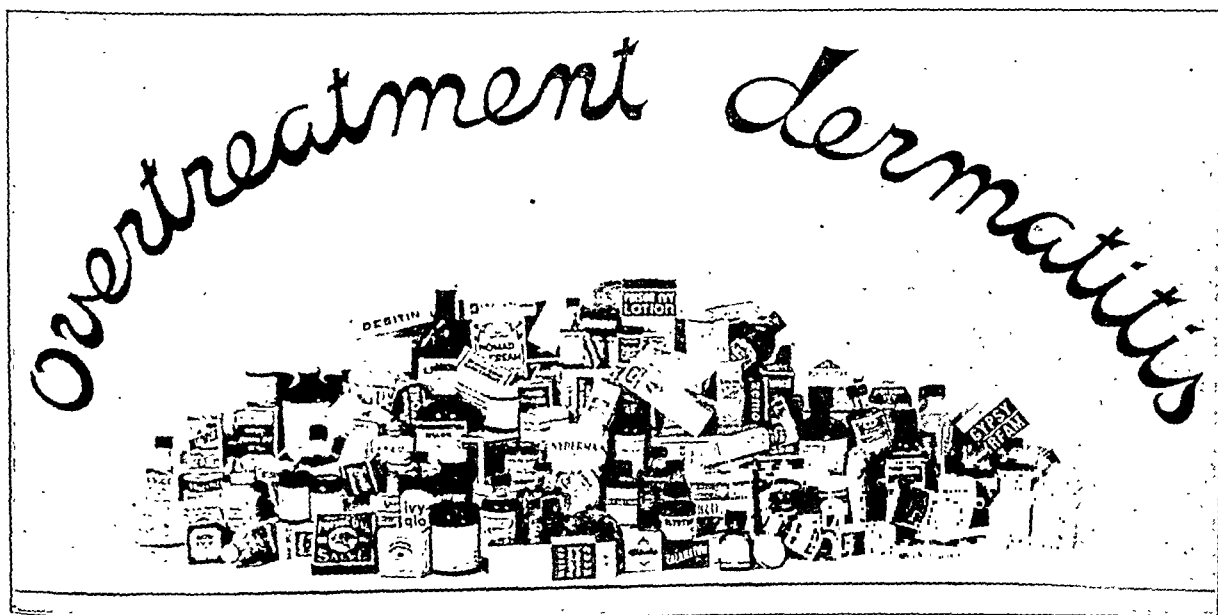


Fig. 8.—Dermatologic remedies for symptomatic dosing of dermatitis venenata due to plants.

remaining 31 were the victims of false information. In their zeal to kill fungi and to prevent secondary infection, they had unwittingly poisoned the skin of their feet. The past treatment patch tests elicited positive reactions to one or more mercurials in 28 cases, proprietaries containing salicylic acid in 8 cases, ethyl aminobenzoate in 7 cases, phenol and cresols in 8 cases, hydroxyquinoline sulfate in 6 cases, absinthin, menthol, echinacea or calendula in 4 cases and solution of formaldehyde in 2 cases. Mapother²⁶ observed 100 patients with diseases of the skin on hospital trains from the South Pacific. Half came on hospital ships with physicians and nurses in attendance who were well supplied with sulfonamide drugs, benzoic and salicylic acid ointment and ammoniated mercury ointments. These patients were walking when they boarded ship but were stretcher patients when they arrived. The other half came on freighters with no medical attention and were nearly all well on arrival.

THE CAUSE OF OVERTREATMENT DERMATITIS

A. THE LACK OF KNOWLEDGE OF HOW TO CARE FOR THE SKIN

A person seized by abdominal pain thinks first of calling a physician. He would not take a purge, and if a friend or relative would suggest a pain pill, he would consider his intelligence insulted. This same person, however, can have a seizure of cutaneous symptoms or have signs develop of a dermatitis, and he will look for relief and treatment in the family medicine chest or the corner drug store. In his judgment if progress is

remedies for the skin are not the treatment of the disease but the hope of getting rid of symptoms. Forget about the diagnosis but take steps to "ditch that itch." Some remedies, wonderful for itching, were approved by *Good Housekeeping*. If physicians received a similar barrage of extravagant advertising, trailed by the host of chemicals in table 3, for the relief of pain, they would exclaim, "We are back in the days of Lydia Pinkham!" To prove that cutaneously she still suffers with us²⁷ and that her spirit cares for the summer scourges by symptomatic dosing, figure 8 was taken.

C. THE TREATMENT OF SIGNS

A classification was made, table 4, of the declared pharmacologic actions and indications of the remedies in table 3. Observe how persons are encouraged to treat symptoms, signs and the traumas, whether physical or mechanical. Irritations of the skin called for sixty-two different remedies containing a wide selection of chemicals and a remarkable variability in their concentration. Burns of the skin could be treated with seventy-three different remedies. A long list of diseases were mentioned which presupposes that the public is skilled in dermatologic diagnosis. There were two remedies for pemphigus, three for dermatitis herpetiformis, three for erysipelas, and to add a ridiculous touch, eleven were indicated for the skin disease, "etc."

D. CONFUSION OF PHARMACOLOGICAL ACTIONS

The overtreated patients pointed out in their collections of remedies prescription after prescription that instead of helping them made their dermatitis worse. This comment was frequently heard, "Our family doctor is a good doctor but this salve he

26. Mapother, P.: Tropical Skin Diseases with Practical References to Civilian Application, Kentucky M. J. 44: 348, 1946.

27. Cohn, D. L.; The Good Old Days, New York, Simon & Schuster, Inc., 1940, p. 210.

TABLE 3.—*Chemicals in Proprieties*

No.	Trade Name	Excipient	Tars and Derivatives	Metallic Compounds	Plant Products	Alcohols and Derivatives	Animal Products
1.	Absorbine Jr.	Liquid	Thymol	Iodine	Absinthin, menthol, echinacea, calendula		
2.	AFKO	Salve	Benzocaine, phenol, petrolatum	Aluminum stearate, mercury, zinc oxide	Eucalyptus, thyme		Lanolin
3.	Anaesthesia	Jelly	Benzocaine (formula not stated).	Boric acid, sodium borate	Tragacanth	Glycerine	
4.	Armand	Salve	Resorcinol	Boric acid, bismuth S. N., zinc oxide, calamine	Oil pine		
5.	Astridino	Salve					
6.	Balsam of Myrrh	Liquid	Chlorothymol	Sodium thiosulfate, sodium bicarbonate, sodium benzoate	Myrrh, benzoin	Ethanol	
7.	Bemex	Liquid	Thymol	Sulfur, zinc oxide, calamine	Menthol		
8.	B. G. O.	Salve	Phenol, salicylic acid, petrolatum	Calamine		Iodoform	Lanolin
9.	Calgesic	Salve	Benzocaine, hexyl-m-cresol	Calamine, lime water		Glycerine	
10.	Cala	Salve	Phenol, coal tar, Benzocaine	Calamine, zinc oxide			
11.	Cal-O-Zin	Salve	Phenol	Calamine, zinc oxide			
12.	Cal-O-Zin	Liquid	Phenol	Calamine, zinc oxide			
13.	Caloten	Liquid	Phenol	Calamine, zinc oxide			
14.	Calmitol	Salve			Camphorated chloral, hyoscynamine oleate, menthol, camphor	Ethanol, ether, chloroform	
15.	Calmitol	Liquid			Camphorated chloral, hyoscynamine oleate, menthol, camphor	Ethanol, ether, chloroform	
16.	Calamatum	Salve	Phenol	Calamine, zinc oxide	Camphor		
17.	Campho-phenique	Liquid	Phenol	Boric acid, tale	Camphor		
18.	Campho-phenique	Powder	Phenol		Camphor		
19.	Ch-Ivy	Salve	Chloramine-T., petrolatum, oil?, wax?		Eucalyptol		
20.	Cormatal	Liquid	Resorcinol	Zinc oxide, boric acid, sodium thiosulfate		Glycerine	
21.	Calmozol	Liquid	Phenol	Calamine, zinc oxide		Glycerine, isopropanol	
22.	Citecele	Liquid		Zinc sulfate	Lobelia, baptisia	Ethanol	
23.	D. D. D.	Liquid	Thymol, phenol, salicylic acid.		Methyl salicylate	Ethanol, glycerine, chloralhydrate	
24.	Derma-Zema	Salve	Petrolatum	Boric acid, zinc oxide	Pine tar		
25.	Derma-Dyne	Liquid	Phenol		Tannin, camphor.	Chloroacetaldehyde, isopropanol	
26.	Derma-Medicone	Salve	Benzocaine, oxyquinoline sulfate, ichthammol, ephedrine sulfate				
27.	Domeboro Tabs	Tablets		Aluminum sulfate, calcium acetate			
28.	Domeboro	Salve	Duponol	Aluminum acetate, boric acid		Cetyl	Wool fat
29.	Desitin	Salve		Zinc oxide			Cod liver oil
30.	Enzo-Cal	Salve	Benzocaine	Zinc oxide, calamine			
31.	Epidermis Fitosis	Liquid	Salicylic acid, benzoic acid, thymol, gentian			Chlorobutanol, alcohol	
32.	Epidermicide	Salve	Salicylic acid, benzoic acid, thymol			Solution formaldehyde	
33.	Extox	Liquid	Phenol	Sodium thiosulfate, soap	Camphor	Isopropanol	
34.	Exone	Liquid		Ferric oleate, sodium oleate	Pine oil		
35.	Fersoben	Liquid		Lime water, zinc oxide	Camphor	Benzyl	
36.	Gypsy	Liquid	Phenol	Boric acid	Camphor, thyme, menthol	Glycerine	
37.	Hike	Salve	Phenol			Ethanol, glycerine	
38.	Hydrosulphosol	Liquid		Calcium polysulfides, calcium thiosulfate			
39.	Hydrosol	Salve		Aluminum acetate			
40.	Hydrosol	Liquid		Aluminum acetate			
41.	Irtex	Liquid	Phenol	Zinc oxide, lime water	Camphor, peppermint	Propylene glycol	
42.	Ivy-Chek	Liquid		Ferric chloride		Ethanol	
43.	Ivolon	Liquid	Oxyquinoline sulfate	Magnesium sulfate, boric acid	Acetic acid, aromatics		
44.	Ivy	Liquid	Phenol	Sodium thiosulfate, Epsom salt	Menthol		
45.	I-V-Eze	Liquid	Phenol	Neocalamine, calamine, zinc oxide			
46.	Ivolav	Liquid		Sodium thiosulfate	Grindelia	Acetone	
47.	Ivy-Dry	Liquid			Tannic acid	Isopropanol	
48.	I. V. Go.	Liquid	Phenol	Zinc oxide, Calcium hydroxide	Camphor	Glycerine	
49.	Ivytox	Liquid	Cresol	Lead subacetate	Sassafras		
50.	Ivy	Liquid	Phenol	Magnesium sulfate, sodium hyposulfite	Belladonna	Ether	
51.	I. V. Q.	Liquid	Triethanolamine			Isopropanol	
52.	Ivy-Glo	Liquid	Thymol			Acetone	
53.	Lock's	Salve	Oxyquinoline sulfate		Camphor, menthol, eucalyptus, aloe vera		Lanolin, stearic acid
54.	LX4	Liquid	Salicylic acid, benzoic acid, benzocaine, chlorthymol			Isopropanol	
55.	LX4	Powder	Salicylic acid, benzoic acid, benzocaine, chlorthymol	Boric acid			
56.	Mederma	Salve	Hydroxyquinoline, phenol		Camphor, menthol, clove, eucalyptus		
57.	Mazon	Salve	Benzoic acid, salicylic acid, tars	Mercury salicylate, sodium stearate			
58.	Medrex	Salve	Salicylic acid, benzoic acid, acetanilid	Zinc oxide	Corn starch, methyl salicylate		
59.	Nomad	Liquid	Phenol	Zinc oxide, lime water	Camphor	Glycerine	
60.	Many Purpose	Liquid	Phenol, chlorothymol	Zinc oxide, boric acid, kaolin, lime water	Camphor	Glycerine	
61.	Neurabalm	Salve	Chlorothymol, benzocaine		Camphor, menthol, methyl salicylate, eucalyptus, caput	Acetone, ethanol, chloroform	
62.	Nox-Ivy	Liquid			Jewel weed	Isopropanol	
63.	Nyderma	Liquid	Phenol, methyl salicylate			Glycerine, isopropanol	

TABLE 3.—Chemicals in Proprietarys—Continued

No.	Trade Name	Excipient	Tar and Derivatives	Metallic Compounds	Plant Products	Alcohols and Derivatives	Animal Products
64.	Nyal Crema	Liquid	Salicylic acid, benzoic acid, resorcin			Ethanol	
65.	O-S	Liquid				Isopropanol	
66.	M22	Liquid	Picric acid, phenol, thymol (formula not stated).	Boric acid		Ethanol	
67.	Pine-O-Balm	Salve					
68.	Nurse Brand	Liquid		Sodium hyposulfite, sodium bicarbonate	Grindelia	Isopropanol chlorobutanol	
69.	Nyal	Liquid			Grindelia	Ethanol	
70.	Helson	Liquid		Aluminum hydroxide, boric acid, borax		Ethanol	
71.	Saxon	Liquid	Methyl salicylate	Aluminum hydrate		Ethanol, glycerine	
72.	Beckman	Liquid		Aluminum acetate	menthol, camphor		
73.	Kellers	Liquid	Phenol	Sodium thiosulfate, zinc oxide, lime water	Grindelia		
74.	McKesson	Liquid		Potassium hydroxide	Menthol, geraniol, cedar, clove	Ethanol	
75.	Gold Medal	Liquid	Thymol	Sodium thio-sulfate, sodium bicarbonate sodium benzoate	Menthol		
76.	Poison Ivy wash	Liquid		Ferrie chloride			
77.	Peroguent	Salve	Cetylpyridinium (Chloride D)	Zinc peroxide, calcium peroxide		Polyglycol	
78.	Apex	Liquid	Thymol, sodium benzoate	Sodium thio-sulfate, sodium bicarbonate	Menthol		
79.	Revall	Liquid			Grindelia	Ethanol	
80.	Merrell	Liquid		Sodium thio-sulfate	Grindelia	Ethanol	
81.	Ormont	Liquid		Aluminum sulfate, aluminum hydroxide.			
82.	Haywood	Salve	(formula not stated).				
83.	Burrough-Wellcome	Liquid		Ferrie chloride			
84.	Tannafax	Jelly		Chloromercuriphenol	Tannic acid	Ethanol	
85.	Polam	Salve	Salicylic acid, phenol, petrolatum	Sulfur, zinc oxide	Starch, menthol, oil cade		Lanolin
86.	Rhu-sol	Salve	Picric acid, phenol, thymol, benzoic acid, oxyquinoline, sulfate.	Boric acid			
87.	Plythol	Salve	(formula not stated).				
88.	Peterson's	Salve	Phenol	Zinc oxide	Camphor, tannic acid, balsam fir		
89.	Pontocaine	Salve	Tetracaine		Menthol		
90.	Resinol	Salve	Resorcinol	Calamine, zinc oxide, bismuth subnitrate	Oil cade		
91.	Rhulitol	Liquid	Phenol	Ammonium alum	Tannic acid, Camphor	Chlorobutanol, isopropanol	
92.	Rhutox	Liquid		Lead acetate	Echinacea, grindelia	Ethanol	
93.	Sayman	Salve	Petrolatum	Zinc oxide, boric acid	Camphor		Lanolin
94.	Skinola	Salve	Resorcinol, petrolatum, white wax	Zinc oxide, bismuth-subnitrate	Oil cade		Lanolin
95.	Thyptol	Liquid	Phenol	Kaolin, alumina gel			
96.	Tolene	Salve	Orthophenylphenol, benzocaine	Thiourea			
97.	Petro-Carb.	Salve	Phenol		Cajeput, safrol, hemlock, camphor		
98.	X. Z. 3.	Salve	(formula not stated).				
99.	Zonite	Liquid		Sodium hypochlorite, sodium hydroxide, sodium chloride			
100.	Zonite	Salve	Chloramine		Menthol		
101.	Zema	Salve	Idobenzoic acid	Bismuth subnitrate, boracic acid, zinc oxide	Menthol, methyl-salicylate		
102.	Zema	Liquid	Phenol, benzoic acid	Boric acid, potassium nitrate, borax	Menthol, methyl-salicylate	Ethanol, glycerine	
103.	Zemacol	Liquid	Salicylic acid, phenol	Orthochloromercuriphenol, zinc acetate			
104.	Zemex	Liquid	Salicylic acid, phenol	Mercury bichloride, zinc acetate			
105.	Tentene	Salve	Chlorothymol	Phenylmercuric acetate	Camphor, menthol		
106.	Zincamine	Cream	Chlorbutanol Phenol	Kaolin, titanium dioxide, zinc oxide, aluminum silicates			
107.	Heliobron	Liquid	Liq. Cadini detergent-		Urea dibron tannate	Isopropanol, glycerine	
108.	Cal-O-Nol	Salve	Benzocaine, phenol	Zinc oxide, calamine	Camphor		
109.	Chloresium	Salve			Chlorophyll		
110.	Dermesthetis	Salve	Benzocaine, phenol		Menthol	Glycerine, benzyl	
111.	Ultracain	Salve	Benzocaine, amyl-para-amino-benzoate				Cod liver oil, lanolin
112.	Chlorox	Liquid		Sodium hypochlorite			
113.	Nyal burn ointment	Salve	Benzocaine, phenol	Zinc oxide			Lanolin
114.	Surfacaine	Salve	Cyclomethycaine				

Gave me to use burnt me up." The collection seldom contained one prescription, but commonly two or three and sometimes four to six. The number of physicians who, through no fault of their own, lost their patients far exceeded the number of overtreated patients. An explanation is apparent in table 4. Dermatitis venenata due to plants is not an infection; yet 43 preparations were antiseptic, 5 bacteriostatic and 5 germicidal. Fungi were killed by 5 remedies, but there were 41 other mixtures declared to be just as effective for athlete's foot. Itching was relieved by 48 different proprietary. The number of chemicals achieving such specificity would be news to dermatologists. It should be mentioned that nine preparations pharmacologically were pleasant, 11 prompt, 11 deodorants, 10 would check spread and 46 were healing.

E. THE WRONG DIAGNOSIS

Commonly the signs of an initial dermatitis venenata due to plants are changed by some home treatment.²⁸ This was not recognized and the most common error was to call the primary overtreatment reaction a fungous infection or a secondary infection. Therapies directed at such diagnosis produced the greatest incidence of overtreatment. We believe that the research and clinical laboratory have furnished data insufficiently critical of true and false pathogenicity of bacteria and fungi, with the result that physicians have been misled and have innocently produced overtreated dermatitis.

28. Downing, J. G.: Treatment of Common Dermatoses, M. Clin. North America 29: 1095, 1945.

THE NEED FOR A COUNCIL ON DERMATOLOGIC HYGIENE AND THERAPEUTICS

Persons in all walks of life seem to regard the skin and its appendages—the hide concept—as an inert covering, something as tough as leather and deserving the same care: namely, soaping, greasing, oiling, painting, dyeing, polishing and of late conditioning. We believe that the science of skin hygiene has

looking up the treatment of Rhus dermatitis in certain textbooks would be greeted with various steps to be taken, each of which needed different chemicals. If he delayed therapy until the procedures were mastered, the patient would probably be well; but if he picked out some formula to try, as likely as not over-treatment would result, especially if the formula for the last stage was used for the first stage. The result of this befuddlement

TABLE 4.—*Pharmacologic and Therapeutic Versatility of the Remedies in Table 3*

Pharmacology	Number of Remedies	Diseases	Number of Remedies	Symptoms	Number of Remedies	Signs	Number of Remedies	Mechanical	Traumas, Number of Remedies	Physical	Number of Remedies
Antiseptics.....	43	Alopecia.....	3	Body odors.....	2	Abscesses.....	3	Abrasions.....	11	Burns.....	20
Antipruritic.....	48	Allergies.....	4	Burning.....	32	Blotches.....	14	Bruses.....	5	Chapping.....	16
Astringent.....	17	Acne.....	2	Discomfort.....	26	Blisters.....	7	Cuts.....	16	Chilblains.....	10
Anesthetic.....	14	Arthritis.....	1	Feet		Comedones.....	5	Chafing.....	31	Frost bite.....	1
Bacteriostatic.....	5	Corns.....	5	blistered.....	8	Cracking.....	2	Lacerations.....	6	Sunburn.....	41
Cooling.....	30	Callouses.....	10	aching.....	5	Eruptions.....	10	Scratches.....	8	Scalds.....	10
Cheek spread.....	10	Carbuncles.....	8	burning.....	14	Irritations.....	62	Strains.....	16	Windburn.....	5
Desiccant.....	6	Dermatitis		itching.....	28	Lesions.....	6	Wrenches.....	5	Wounds.....	3
Deodorant.....	11	herpetiformis.....	3	hot.....	5	Rashes.....	11				
Emollient.....	15	Drug eruptions.....	3	perspiring.....	3	Ulcers.....	3				
Efficient.....	8	Eczema.....	43	tired.....	10	Weeping.....	2				
Fungicidal.....	5	"Etc.".....	11	Hurts.....	5						
Germicidal.....	5	Erysipelas.....	3	Headaches.....	2						
Healing.....	46	Herpes.....	12	Hypotension.....	1						
Pleasant.....	9	Hemorrhoids.....	32	Itching.....	48						
Protective.....	20	Infection.....	6	Muscles							
Penetrative.....	7	Inpigo.....	5	aches.....	9						
Prompt.....	11	Insect bites.....	55	jaded.....	3						
Rubefacient.....	6	Ingrown toes.....	2	lazy.....	4						
Refreshing.....	7	Miliaria.....	36	sore.....	10						
Soothing.....	42	Plant venenatas.....	106	stiff.....	8						
Softening.....	2	Pemphigus.....	2	Neuralgic pains.....	1						
		Pompholyx.....	3								
		Pyoderma.....	5								
		Prurigo.....	2								
		Psoriasis.....	9								
		Rubeola.....	5								
		Sycosis vulgaris.....	3								
		Trench foot.....	1								
		Tinea									
		pedis.....	46								
		cruris.....	12								
		capitis.....	3								
		Urticaria.....	22								
		Varicella.....	5								
		Warts.....	2								
		War plant workers.....	1								

rested too long in the hands of those with something to sell. The promoters of the enterprises that trade on the human skin talk knowingly and cite eminent authorities, but their propaganda commonly causes skin trouble, like the fourteen day dermatitis of thirty-six skin specialists. Dermatitis from external causes is the most common dermatosis seen by us, and its incidence continues to rise. Reports that this or that contactant causes dermatitis continue to flood the literature. The offender is always apprehended after instead of before it has caused trouble. A mass of data has been published which needs to be integrated and used as the basis for establishing a modern concept of dermatologic hygiene. For example, we have asked several hundred patients their definition of a clean skin. Invariably, it was a skin that had been soaped and rinsed with water. We question this definition and incline more to the belief that a skin is clean when water-soluble substances have been rinsed off with warm water. The portion of the lipid film insoluble in water that remains protects the horny mantle. Exposing the latter predisposes to dermatitis. A person who does not care for his skin properly is the victim of misleading information, but the responsibility for his dermatitis rests on the shoulders of those to whom he has entrusted his health. That care of the skin which prevents dermatitis will be the science of dermatologic hygiene.

Over one hundred different chemicals make up the formulas of the proprietaries, table 3, whose many therapeutic indications of which included dermatitis venenata due to plants. A review of textbooks on dermatology and allergy showed the same treatment versatility of topical chemicals; the number and composition of the formularies seemed endless. Some mixtures required fastidious compounding in order to be effective. A physician

of chemistry, pharmacology, dosage and indications of dermatologic chemicals is shown in table 5. Improper treatment caused unnecessary suffering not only physically but also mentally and

TABLE 5.—*The Effect of Overtreatment on the Duration and Healing Time of Dermatitis Venenata Due to Plants*

Properly Treated	Average Duration	Average Healing Time	Average Duration of Symptoms and Signs	Hospitalization	Time Lost from Gainful Work	Medical Cost
50 Cases	6 Days	1 Week	2 Weeks	None	Insignificant	Nominal
Improperly Treated						
152 Cases	3.4 Weeks	3.7 Weeks	7.1 Weeks	9 Cases for average of 1.9 weeks	42 Cases lost average of 5 weeks	Burdensome

economically. The creation of the Council on Pharmacy and Chemistry brought order out of existing chaos in oral and parenteral therapy. Exposing the symptomatic cure-alls nurtured the science of nutrition. A council on Dermatologic Hygiene and Therapeutics can end the bewilderment in diagnosis and treatment for the skin. Exposing the cutaneous symptomatic cure-alls should nurture the science of dermatologic hygiene. Making the American home safe for the skin and the prevention of dermatitis are a responsibility of dermatologists.

Clinical Notes, Suggestions and New Instruments

PREVENTION AND TREATMENT OF BEDSORES

An Air Mattress Accomplishing Alternation of Pressure Points

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The most important single factor in the prevention or treatment of bedsores is frequent movement of the patient, so that pressure at any one point is not permitted to exist too long. Munro¹ stated that the essentials of treatment in cases of spinal cord injury are (1) to move the patient on an hourly time schedule, (2) to prevent the development of any serious exhaustion by such methods as appropriate feeding, transfusions and administration of vitamins, (3) to prevent the occurrence of sepsis and to maintain a constantly dry bed by proper use of a tidal drainage apparatus and (4) to avoid all forms of external artificial splinting or support to the spinal column so long as the patient with the spinal cord injury is bedridden.

In certain types of cases, the frequent changes in the patient's position which are necessary to maintain the skin in a healthy state impose a serious drain on the time of the nursing staff. Since the benefit which is obtained by movement of the patient is due to a redistribution of the pressure points, an effort was made to develop a mattress which would automatically accomplish this result.

The apparatus consists of a pneumatic mattress with air cells $1\frac{1}{4}$ inches (3 cm.) in diameter, running transversely the width of the mattress. The alternate air cells are connected to a manifold which constitutes the edge of each side of the mattress. These two systems of transverse air cells are then alternately inflated and deflated at intervals of two to three minutes, so that the patient's body is alternately resting on the odd-numbered cells and then on the even-numbered cells. This produces a massaging effect which aids the cutaneous circulation. The alternate inflation and deflation of the two systems is accomplished by means of a tiny air pump which is driven by a small electric motor which develops $\frac{1}{50}$ horsepower, which runs quietly, and is connected to a system of valves which automatically shift the air first into one system and then into the other. By changing the speed of the cycle and the amount of pressure, it has been found that the most generally accepted rate is a five minute cycle at a pressure of 1 pound or approximately 70 mm. of mercury.

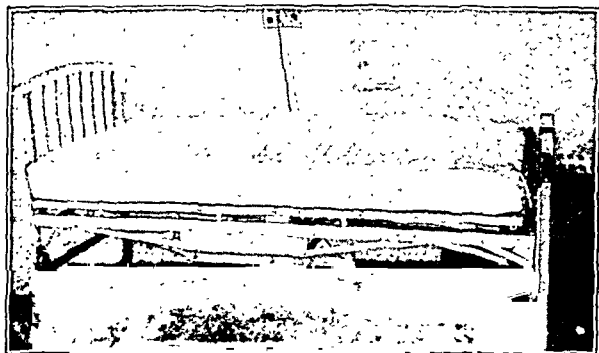
The alternating pressure mattress is constructed of a flexible water-proof plastic material. It is placed on top of an ordinary mattress and then the bed made up as usual except that since it is water proof it does not need to be protected by a rubber sheet. The sensation of movement caused by the operation of the mattress is usually reported as mildly pleasurable. It does not produce friction of the skin but merely a gentle compression and release. There is no movement of the patient's body or extremities because of the wide dispersion of the pressure points and the gradual inflation and deflation, which is arranged so that at the midpoint of each half-cycle the air pressure in the two systems is the same.

This type of mattress has been in use at the Cleveland Clinic since July 1947. Sixteen patients who were considered likely candidates for bedsores have been treated on the mattress for periods of time varying from five to sixty-three days. The patients selected had paraplegia or quadriplegia, due to cord compression or advancing cachexia, or were immobilized in the dorsal decubitus for long periods for treatment of a fracture of

the hip. The skin of each of these patients remained healthy, and less nursing care was required than is usually employed in similar cases.

Thirteen patients with bedsores were placed on the mattress for varying periods of time. They were turned infrequently in order to test the efficiency of the mattress. The only local therapy employed in 9 cases was mechanical cleansing of the ulcer once or twice a day followed by the application of tincture of benzoin and a sterile dressing. In 4 cases powdered sulfathiazole was substituted for the tincture of benzoin.

Nine of these patients who were in reasonably good nutritional state all showed improvement or complete healing of their bedsores after periods of from five to forty-five days on the mattress. One patient with severe ulcerative colitis and peritonitis died after fourteen days on the mattress. The sacral decubitus ulcer was unchanged. Another patient with metastatic carcinoma of the spine and a sacral decubitus ulcer died after fourteen days on the mattress with some improvement in the appearance of the lesion. Another patient with carcinoma of the descending colon died after five days, and his sacral ulcer was unchanged. A patient with paraplegia due to metastatic carcinoma of the spine with bedsores on the sacrum and left trochanter was on the mattress for twenty days without change in the condition of the ulcer. He died three weeks after discharge from the hospital.



Alternating pressure mattress. The tubes leading from the two systems of transverse air cells are connected to the air supply. The air is diverted first into one system and then into the other by a pump and an automatic valve mechanism. The mechanism is contained in the rubber-mounted cabinet attached to the foot of the bed.

SUMMARY AND CONCLUSION

The principle of the alternating pressure mattress appears to be beneficial in the prevention and treatment of bedsores in some bedridden patients. It adds to the comfort of the patient and decreases the frequency at which the position must be changed. It thereby decreases the amount of nursing care required. It does not obviate the need of measures for maintaining a dry bed, supporting the patient's nutrition and preventing sepsis.

Malarial Diabetes.—It has long been known that malaria produces different clinical syndromes according to its incidence in different organs—e. g., cerebral malaria, malarial dysentery, etc. Manson-Bahr (1946) mentions acute hemorrhagic pancreatitis caused by a blockage of capillaries by *Plasmodium falciparum*. Cerebral malaria is sometimes wrongly diagnosed as heat-stroke, sun-stroke, heat-exhaustion, and often ends in fatal coma, and the true diagnosis is established by the discovery of malarial parasites in the blood capillaries. On the other hand, latent malarial infection without clinical symptoms of sufficient gravity to attract attention is often missed. In the following case the latent malaria seemed at first to be of no clinical significance. . . . [However] the diabetes was evidently caused by M. T. malaria of the islets of Langerhans, and was apparently cured by specific antimalarial treatment.—Rau, Leo, M.D., Malarial Diabetes, *The Lancet*, July 3, 1948.

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

1. Munro, D.: Care of Back Following Spinal Cord Injuries: Consideration of Bed Sores, *New England J. Med.* 223: 391-398 (Sept. 12) 1940.

Council on Pharmacy and Chemistry

STREPTOMYCIN IN THE TREATMENT OF
TUBERCULOSIS

Current Status

REPORT TO THE COUNCIL

The use of streptomycin for the treatment of tuberculosis has aroused much interest which has resulted in extensive research. The following report has been adopted by the Council for publication, and it is offered to keep the medical profession informed of the progress that is being made and to minimize some of the confusion that is arising concerning this treatment of tuberculosis. In adopting this report, the Council expresses its appreciation of the cooperation that has been provided by the various groups submitting these statements and hopes that such collaboration will serve as a pattern for future research of such fundamental importance.

AUSTIN SMITH, M.D., Secretary.

The present report is a sequel to that which was published approximately one year ago¹ under the same auspices. The most important progress which it will recite can be contained in the following four statements: (1) The series of patients whose treatment has been completed has so considerably enlarged (from 500 to 2,800), and their post-treatment course has been observed for such considerable periods of time, that it becomes possible to substitute definite for presumptive statements in many instances. (2) A reduction in daily dosage from 2.0 Gm. to 1.0 Gm., and a further reduction to 0.5 Gm., has been accompanied with a significant and gratifying reduction in toxic manifestations. (3) Certainly in the case of the reduction to 1.0 Gm., and apparently in the further reduction to 0.5 Gm., there has been no loss of therapeutic efficacy, nor is any such loss encountered if the daily dose is divided into two, rather than into five, injections. (4) More prolonged observation of tuberculosis of bone and joint, and of the genitourinary tract, has made it possible to take a more optimistic view of the treatment of these diseases than was the case a year ago. A fifth statement, to the effect that much remains to be done and to be learned, on both the laboratory and clinical sides of the field, is always in order and is hereby added.

The present study was organized as a cooperative venture by the Veterans Administration, Army and Navy, in May 1946. The nine hospitals which originally participated were increased to twenty-three in December 1946 and, as of March 1948, to forty-eight, for, although no brief is made in behalf of quantity *per se*, nothing is gained by denying its particular usefulness in the case of a disease as protean in its manifestations and as unpredictable in its outcome as is tuberculosis. With the few unavoidable exceptions which will be enumerated subsequently, all cases admitted to the study were proved to be of tuberculous origin by bacteriologic or pathologic means. In all instances as a matter of theory, and in the vast majority of instances as a matter of practice, the disease of all cases admitted to the study was progressing unfavorably or was stationary at the time streptomycin therapy was

started. Five regimens have been studied in sufficiently large groups of cases to permit rather precise evaluation of their comparative effectiveness. Three additional variants are being presently explored. The selection of new regimens for exploration has been made by the investigators and a group of consultants, in conference assembled, after a review of their previous experience. When more than one selection was made, the participating hospitals voluntarily assigned themselves to the one or the other. The conferences which made and effected these decisions have been held semi-annually. The previous report to the Council¹ was made on the basis of data submitted to the Third Conference in St. Louis in May 1947. The present report is based on data submitted to the Fifth Conference in Chicago, during April 1948.

The Fifth Conference received acceptable data² on 2,780 patients for whom treatment with streptomycin had been completed between June 1946 and March 1948. These patients are listed in table 1, according

TABLE 1.—Types of Tuberculosis Treated with Streptomycin, 2,780 Completed Cases

Type of Tuberculous Condition	Number of Patients Treated with				Total
	1.8-2.0 Gm.	2.0 Gm.	1.0 Gm.	0.5 Gm.	
	120 Days	60 Days	120 Days	120 Days	
Pulmonary	375	114	395	56	940
Tracheobronchial*	67	0	45	0	112
Laryngeal*	61	0	90	15	166
Cutaneous sinuses and fistulas.....	126	11	229	7	373
Miliary and meningeal†.....	260	0	0	0	260
Bone and joint disease.....	133	2	67	0	192
Genitourinary	86	0	26	0	112
Tuberculosis of alimentary tract..	38	0	32	0	70
Lymphadenitis	17	2	17	0	36
Peritonitis	17	0	10	0	27
Otitis media	9	0	4	0	13
Tuberculosis of skin and eye.....	6	0	5	0	11
Pericarditis	3	0	2	0	5
Conditions necessitating thoracic operation, prophylaxis‡.....	291	0	169	0	460
Total	1,479	129	1,694	78	2,780

* Duration of treatment variable.

† Duration of treatment and dose variable.

‡ Duration of treatment twenty-one days.

to the categories of disease in which they fall. The results will be discussed in the order in which the categories appear within the table.

RESULTS OF INVESTIGATION

PULMONARY TUBERCULOSIS

The results of treatment with the initial regimen (1.8 to 2.0 Gm., in six or five divided doses, daily for one hundred and twenty days) were described in the previous report and have subsequently been published.³

2. The majority of these data were contributed by the following twenty-three hospitals. Fitzsimons General Hospital (USA), Denver; Corona Naval Hospital (USN), Corona, Calif., and Veterans Administration Hospitals at Brecksville, Ohio; Bronx, N. Y.; Butler, Pa.; Castle Point, N. Y.; Dayton, Ohio; Excelsior Springs, Mo.; Hines, Ill.; Legion, Texas; Livermore, Calif.; Memphis (Kennedy), Tenn.; Minneapolis; Oteen, N. C.; Richmond, Va.; Rutland Heights, Mass.; San Fernando, Calif.; Staten Island, N. Y.; Sunmount, N. Y.; Van Nuys, Calif.; Walla Walla, Wash.; Waukesha, Wis., and Wood, Wis. Data on a smaller number of cases were contributed by Veterans Administration Hospitals at Albuquerque, N. M.; Alexandria, La.; Bedford, Mass.; Chamblee, Ga.; Cleveland, Columbia, S. C.; Dearborn, Mich.; Fort Howard, Md.; Fort Logan, Colo.; Framingham, Mass.; Los Angeles; Louisville, Ky.; Martinsburg, W. Va.; McKinney, Texas; Nashville, Tenn.; Newtonington, Conn.; New Orleans; Oakland, Calif.; Outwood, Ky.; Springfield, Mo.; Temple, Texas; Wadsworth, Kan., and Whipple, Ark., and by Nepemung Sanatorium, Nepemung, Minn., and Glen Lake Sanatorium, Oak Terrace, Minn.

3. The Effect of Streptomycin upon Pulmonary Tuberculosis, Streptomycin Committee, Veterans Administration, Am. Rev. Tuberc. LVI: 485-605 (Dec.) 1947.

Because of lack of space this article has been abbreviated in THE JOURNAL. The complete paper will be found in the reprints.

Prepared by the Streptomycin Committee, Veterans Administration, at the request of the forty-eight Veterans Administration, Army and Navy Hospitals that are cooperating in the study.

1. The Effects of Streptomycin on Tuberculosis in Man, report to the Council on Pharmacy and Chemistry, J.A.M.A. 135: 634-641 (Nov. 8) 1947

The intervening year has been devoted to examining the effect of changing this regimen, on the one hand by decreasing the duration of treatment and, on the other hand, by decreases in the daily dosage. Four variations on the original theme have been used: 2.0 Gm. in five doses for sixty days, 1.0 Gm. in five doses

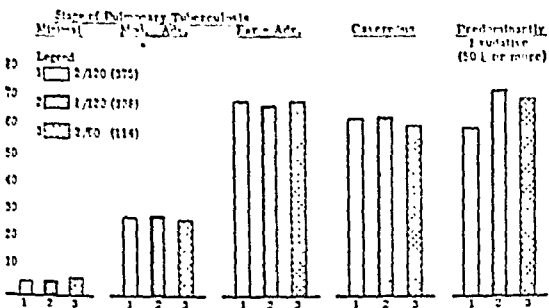


Fig. 1.—Comparison of characteristics of groups of cases of pulmonary tuberculosis treated with different regimens of streptomycin (forty-eight Veterans Administration, Army and Navy hospitals, April 1948). The vertical column of figures at the left shows the percentage of cases.

for one hundred and twenty days, 1.0 Gm. in two doses for one hundred and twenty days, and 0.5 Gm. in two doses for one hundred and twenty days. The results of the five regimens, as recorded by the investigators in 943 patients,⁴ appear in table 2, those of the two 1.0 Gm. groups being pooled, since it developed that there was no clear difference between them. The duration of post-treatment observation varies, of course, with the length of time the regimens have been under study. In the two oldest regimens (columns 1 and 3 of table 2) it exceeds three months in 80 per cent of the patients and, in one of these (column 1), exceeds twelve months in 14 per cent.

Figure 1 indicates the similarity in the extent and character of the disease treated by the several regimens and figure 2 illustrates certain results which occurred during and after therapy. In the latter figure the roentgenologic results are recorded as of one hundred and twenty days after beginning streptomycin in all three regimens, and the 0.5 Gm. regimen has been excluded because the brevity of post-treatment observation distorts certain of its data.

Roentgenologic Results.—Table 2 reveals a rather striking similarity both in the status of the disease prior to treatment and in its course during the administration of streptomycin by all of the regimens. An improvement, which had been present in only 1 to 5 per cent of the patients prior to treatment, appeared in from 77 to 83 per cent during treatment.

Roentgenologic observations being a rather subjective matter, it was considered wise to expose this decision to an unprejudiced jury. For that reason, ten phthisiologists,⁵ not connected with the study except by ties of common interest, were nominated by the president of the American Trudeau Society and spent three days of March 1948 in reviewing the roentgenograms of about 300 patients with tuberculosis who had been treated by three regimens of streptomycin in groups of approximately 100 each. Four roentgenograms from each patient were viewed and graded, altogether independently by each of four jurors. Examination of the

pretreatment roentgenograms was completed before the roentgenograms taken during treatment were seen. A preliminary analysis of the data, from this rather severe test, indicates complete qualitative agreement between jury and investigators as to the similarity of the roentgen changes which occurred during the several regimens. Quantitatively, the jury adjudged the changes to be less, but not decidedly so; they thought that 9 to 13 per cent (as compared with 1 to 5 per cent) had been improving prior to therapy and that 71 to 75 per cent (as compared with 77 to 83 per cent) had improved during therapy, a difference at least partially due to the fact that the jury weighed the changes in each lung separately whereas the investigators considered only the lesions against which treatment was being directed. Figure 3 presents the result of their evaluation graphically and grades the degrees of improvement or worsening during the pretreatment and treatment periods in "1" to "4," representing, respectively, variations from "slight" (plus or minus 1) to "very marked" (plus or minus 4). The similarity of the curves with their peaks to the left indicates the similarity in the pretreatment course of the lesions selected for treatment by the three regimens, while the similarity of the curves with their peaks to the right indicates their similarity to the response to treatment by these regimens; the disparity between the two groups of curves (with their respective peaks near minus 2 and plus 2) indicates the difference between pretreatment and treatment courses. In the series treated for only sixty days, improvement continued to occur during the sixty days following its completion; the opinions recorded in figure 3 are based on roentgenograms taken one hundred and twenty days after the commencement of therapy. One of the points which this figure does not demonstrate, but which has been derived from the data is that 75 per cent of the patients who were

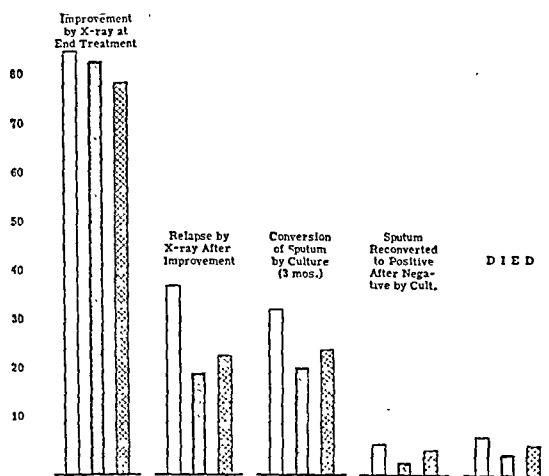


Fig. 2.—Results of treatment of pulmonary tuberculosis with different regimens of streptomycin (forty-eight Veterans Administration, Army and Navy hospitals, April 1948). The vertical column of figures at the left shows the percentage of cases. The unlined columns represent the regimen of 2 Gm. for one hundred and twenty days (375 cases); the notched columns represent the regimen of 1 Gm. for one hundred and twenty days (398 cases), and all checked columns represent 2 Gm. for sixty days (114 cases).

becoming worse prior to streptomycin therapy (as opposed to those whose roentgenograms showed no change or improvement) improved during treatment, a reversal in trend which is regarded as especially significant. It will be observed that the jury review did

4. The results in 184 additional cases, from a single hospital, have been omitted because of differences in the method of study and reporting.
5. Dr. Howard M. Bosworth, Dr. William G. Childress, Dr. David A. Cooper, Dr. Bruce H. Douglas, Dr. H. Harold Fellows, Dr. John N. Hayes, Dr. Kirby S. Howlett Jr., Dr. Herbert L. Mantz, Dr. John H. Skawlem and Dr. Julius L. Wilson.

not extend to the 0.5 Gm. per day regimen, and on this account, as well as because of the relatively small size of the series, the results in this regimen are regarded as requiring additional confirmation, although they were analogous to the others in the judgment of the investigators.

Let the recital of these figures give an impression of unbridled enthusiasm, three points should be made clear: (1) The type of lesion under discussion is carefully selected, relatively recent and predominantly exudative; the unsuitability of many patients with pulmonary tuberculosis for streptomycin therapy is evidenced by the observation that, although 9 of 10 cases of tuberculosis in Veterans Administration hospitals are of this type, in only one third (943 of 2,780) of the cases covered by this report was treatment given for the pulmonary disease. (2) The type of clearing which has been recorded as "improvement" is partial and only rarely complete. (3) The percentage of relapses which occur after improvement during treatment (7 to 10 per cent), and following treatment (14 to 29 per cent), is considerable (fig. 2).

Clinical Changes.—Clinical improvement, when it occurs, is prompt and obvious within the first two weeks of treatment. In its timing, as would be anticipated, it precedes roentgenologic improvement which may be obvious on the thirty day roentgenogram but is rarely considerable before the roentgenogram taken sixty days after the beginning of treatment. A decrease in cough and an increase in sense of well-being occur with such constancy that their incidence was not recorded. Fever was reduced to normal in approximately 60 per cent (table 2) of those patients who were febrile at the time treatment was started, and approximately 45 per cent of the patients gained more than 10 pounds (4.5 Kg.) in weight. Conversion of the reaction of the sputum to negative, as demonstrated by the relatively rigid criteria of three successive negative monthly cultures, was reported in from 21 to 32 per cent of patients on the various regimens (fig. 2). Fifty-two (5.9 per cent) of the 887 patients treated under the three regimens initiated more than a year ago are now dead.

Consensus.—It was agreed that the previous decisions as to the role of streptomycin in the treatment of pulmonary tuberculosis had been confirmed and had been amplified by the study of additional regimens. Thus, sixty days of treatment had proved as effective as one hundred and twenty days, 1.0 Gm. per day as effective as 2.0 Gm. per day and 0.5 Gm. per day, probably, as effective as either. Streptomycin, in conjunction with bed rest, has been demonstrated to reverse the trend of progressive predominantly exudative moderately and far advanced disease in a formidable majority of the cases. Since this reversal does not usually extend to complete clearing and since a considerable percentage of relapses occur, streptomycin therapy is rarely definitive. Its most frequent usefulness appears, therefore, to lie in conjunction with collapse therapy. In the opinion of the investigators, collapse therapy was made feasible by streptomycin therapy in approximately 20 per cent of the patients and was actually induced in approximately 25 per cent following the conclusion of treatment. It was agreed that the optimum time to induce collapse was during the first weeks of streptomycin therapy before the microorganisms become resistant (referred to subsequently). This combination of procedures has been followed since October

1947; there seems to be little doubt about its logic, but its effectiveness will be difficult to evaluate.

It was further agreed that it was unwise to use streptomycin in the treatment of minimal pulmonary tuberculosis until some means of avoiding the development of resistance had been found; this, on the generally accepted thesis that one's single bullet should not be used against a skunk when a tiger is in the offing.

It was, finally, agreed that streptomycin did not, and could not be expected to, affect favorably the roentgenologic picture in long-established fibrous or caseous lesions and that its effect on cavities was unpredictable and often, when favorable, fleeting.

TRACHEOBRONCHIAL AND LARYNGEAL TUBERCULOSIS

The results of streptomycin therapy in 112 cases of tracheobronchial and 166 cases of laryngeal tuberculosis are shown in table 3. The demonstration of acid-fast bacilli in sputum by culture was accepted as evidence of tuberculous causation in the presence of repeatedly positive bronchoscopic or laryngoscopic observations. Administration of streptomycin by aerosol was abandoned rather early in the course of the

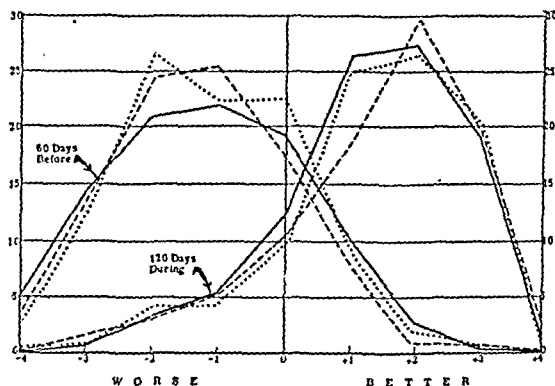


Fig. 3.—Radiologic changes during successive sixty day and one hundred and twenty day periods before and during streptomycin therapy (jury review of 286 patients with pulmonary tuberculosis in thirteen Veterans Administration hospitals, March 1948). The unbroken line represents the regimen of 2 Gm. for one hundred and twenty days (three hundred and thirty-two opinions regarding 83 patients); the broken line represents the regimen of 2 Gm. for sixty days (four hundred and four opinions regarding 101 patients), and the dotted line represents the regimen of 1 Gm. for one hundred and twenty days (four hundred and eight opinions regarding 102 patients). The legends "worse" and "better" indicate changes during the period of treatment. The vertical column of figures at the left shows the percentage of jurors' opinions.

investigation when it was proved to be a relatively ineffective route of administration, and all streptomycin was injected intramuscularly. In the 1.0 Gm. per day and 0.5 Gm. per day regimens, the drug was given in two injections at twelve hour intervals. The duration of treatment was one hundred and twenty days, or until shortly after maximum improvement was observed.

It will be noted (table 3) that, when complete healing occurred, it required an average period of eight weeks, but that entire relief of pain and dysphagia occurred with more promptness and greater constancy. Although in both tracheobronchial and laryngeal tuberculosis, between 80 and 90 per cent of the lesions are reported as either healed or as moderately or decidedly improved, on direct observation the results are less constant than those of the small series which were first reported from this study.⁶ This difference would

6. Brewer, L. A., III, and Bogen, E.; Streptomycin in Tuberculous Tracheobronchitis, *Am. Rev. Tuberc.* LVI: 408-414 (Nov.) 1947.

not appear to be due to the inclusion of "noninflammatory fibrostenotic" lesions in the present series, for less than 10 per cent of the cases are reported to have been of this character. It may have been the tendency to include inflammatory lesions, as distinct from the purely ulcerative lesions which characterized the first series. It will be observed that the results with 1.0 Gm. per day appear superior to those obtained with 1.8 or 2.0 Gm. per day. It seems unlikely that this was the case. The difference may be ascribed to increasing skill in the selection of appropriate cases as the investigation progressed or to differences in the pretreatment duration of the lesion, which was reported as averaging only five months in the patient receiving 1.0 Gm. per day and as nine months in those receiving the larger dose. Over one half of the cases have been observed between three and twelve months after the completion of treatment, and, during this period, the lesion has been observed to recur in from 8 to 13 per cent of the cases; patients who have been retreated have responded well. This may be as good a place as any to remark that relapses have occurred following streptomycin therapy in all types of tuberculosis which have been observed in any quantity during this study.

Consensus.—Although the results were slightly less successful than those in the small series reported last year, it was agreed that improvement in from 80 to 90 per cent of the cases justified the original conclusion that tracheobronchial and laryngeal tuberculosis compose one of the most favorable fields for streptomycin therapy. One gram per day proved certainly as successful as the larger dose, and, judging from a too small series of cases, 0.5 Gm. per day would appear to be equally so. Although the underlying pulmonary pathologic condition is, in these cases, frequently of a type which streptomycin cannot be expected to affect, and although relapses may be anticipated in consequence, it was felt that the prompt and enormous improvement in the distressing symptoms of laryngitis was alone worth the price—so to speak—of the entire study.

CUTANEOUS SINUSES AND FISTULAS

Table 4 presents the results which have followed the use of streptomycin in 368 patients with six hundred and seventy-four cutaneous sinuses and fistulas. A tuberculous cause was established in each patient by biopsy of a tract or by culture of the drainage material. The average duration prior to treatment was forty-five weeks. All streptomycin was injected intramuscularly for a period of one hundred and twenty days, and a new regimen, employing only 0.2 Gm. per day, was explored in an attempt to establish a minimal effective dose.

The results were, again, less striking than those obtained in the original series,⁷ in which, it may be remembered, fifty-nine of sixty sinuses (98 per cent) healed completely. In the present, much larger, series, approximately four of five sinuses and fistulas (78 per cent) have healed. Healing occurred, on the average, in eight weeks. An attempt was made to trace this discrepancy in results by distinguishing first between sinuses and fistulas and then by dividing these into subgroups on the basis of their origin. The attempt was successful in the sense that 86 per cent of the sinuses, and only 57 per cent of the fistulas, healed. Sinuses originating in bone healed more frequently

than those with other origins, and fistulas connecting with the pleura did least well. It is the predominance of fistulas in the group treated with 1.0 Gm. per day that makes the results with this dosage (table 4) appear inferior to those obtained with the larger dosage; the appearance is deceptive. The series treated with 0.5 and 0.2 Gm. per day are too small to warrant comment, but it is a fact that six of seven sinuses treated with the smaller dose have healed, although, the investigators thought, more slowly than would have been the case with larger doses.

The practice of combining surgical procedures with streptomycin therapy has proved its value and is being generally followed by all investigators. Pus is evacuated and necrotic tissue or bone removed either at the time streptomycin therapy is started or shortly thereafter. This was accomplished in one third of the patients in the present series. Seventy-six per cent of the patients receiving the two larger dosage regimens have been followed up for between three and twelve months since the completion of therapy, with a relapse rate of only 2 per cent.

Consensus.—The striking usefulness of streptomycin in the treatment of cutaneous sinuses and fistulas has been confirmed beyond doubt. A regimen employing 1.0 Gm. per day is as effective as larger doses, and there is suggestive evidence (table 4) that smaller doses may be equally useful. Incision and drainage may be safely performed.

MILIARY AND MENINGEAL TUBERCULOSIS

In terms of end results, the situation has deteriorated somewhat since the earlier report,¹ although not beyond anticipation. Of the first 100 patients with bacteriologically proved diagnosis, treated between March 1946 and May 1947,⁸ 49 were alive at the latter date, 40 in October 1947 and only 24 in April 1948. Of these 24 survivors, 12 are among the 22 with initial diagnosis of acute miliary tuberculosis, 9 are among the 43 with tuberculous meningitis and only 3 are in the group of 35 with combined miliary and meningeal disease which has, by all odds, the worst prognosis. Fifteen of the 24 survivors were substantially normal in April 1948, between eleven and twenty-five months after treatment was instituted. The late deaths have usually (14 of 16) been due to the development of meningitis in the patients who previously had acute miliary tuberculosis and to relapses in those with meningitis. The only changes in protocol which have been made by the Conferences since May 1947 have introduced combined streptomycin-"promin" (sodium p,p'-diaminodiphenylsulfone-N,N' didextrose sulfonate) therapy—the latter drug being injected intravenously in a daily dosage of 4.0 Gm. during two of every three weeks—a reduction of the intrathecal dose of streptomycin to 0.05 Gm. three times a week and, in the presence of combined disease, an increase in the intramuscular dose to 4.0 Gm. daily for fourteen days and then a reduction to 3.0 Gm. for the remainder of the course. Under this revised protocol, 160 additional patients have been treated, but the data regarding them had not been collected for the Fifth Conference. The changes would not appear to have improved the results.

Consensus.—It was agreed that the immediate clinical response and the resolution of pulmonary lesions made the continued use of streptomycin mandatory in

7. Brock, B. L.: Streptomycin in the Treatment of Draining Tuberculous Sinuses, *J. A. M. A.* 135: 147-149 (Sept. 20) 1947.

8. Bunn, P. A.: One Hundred Cases of Miliary and Meningeal Tuberculosis Treated with Streptomycin, *Am. J. M. Sc.*, to be published.

all cases of tuberculous meningitis and acute miliary tuberculosis. The end results, in terms of surviving patients, are still remarkable in comparison with pre-streptomycin days, although less happy than had been hoped. The careful pathologic studies which are now in progress should add considerably to existing knowledge of the pathologic changes and pathogenesis of both pulmonary and meningeal lesions. It was also agreed that little or nothing had been learned about the most effective regimen, as to duration, dosage or route of administration. There was a general feeling that something new would have to be added, but, as to what that something should be, there was a paucity of ideas.

TUBERCULOSIS OF BONES AND JOINTS

In bone and joint disease the situation has changed rather radically for the better since the previous report.¹ At that time (May 1947) 26 patients were under treatment. At this time (April 1948), 192 patients have completed treatment. In all cases except those involving the spine, where diagnosis by repeated roentgen observation was acceptable under the protocol, the tuberculous causation was proved by bacteriologic or pathologic means. All patients except 2 received streptomycin for one hundred and twenty days in the amount of 1.0 Gm. (67 patients) or 2.0 Gm. (123 patients) daily, the results of the two regimens, according to the investigators, being indistinguishable. There are no data yet available on the results of treatment with 0.5 Gm. per day.

The investigators were asked to report to the Conference on the changes in the local signs (i. e., inflammation, pain, swelling, limitation of motion) and in the roentgenograms which occurred during treatment. They found the local signs to have shown some degree of improvement in 91 per cent of the patients and to have either disappeared or shown decided improvement in 53 per cent. The roentgenologic results were less favorable, only 34 per cent showing improvement and 59 per cent being unchanged. They also reported roentgenologic improvement to have occurred in 23 per cent of patients during the post-treatment observa-

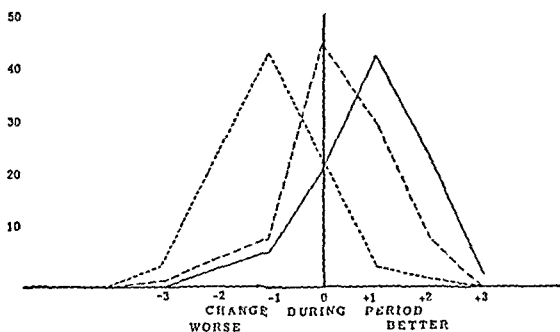


Fig. 4.—Radiologic changes in tuberculosis of bones and joints during successive periods before, during and after streptomycin therapy (94 patients; jury review of one hundred and twelve lesions in nineteen Veterans Administration hospitals, March 1948). The vertical column of figures at the left shows the percentage of cases. The short dashes show the change before streptomycin therapy (three months), the long dashes show the change during streptomycin therapy (four months), and the unbroken line shows the change after streptomycin therapy (average four months).

tion period, although, because of the phrasing of the question, it was impossible to determine whether this improvement was additive or merely a continuation of improvement already started, a suspicion that the for-

mer might be the case led to the jury review of one hundred and twelve lesions in 94 patients, which forms the substance of table 5.

In the cases subjected to this review⁹ there were fifty-eight lesions of the spine and thirty-seven assorted lesions of the extremities. The roentgenograms at the

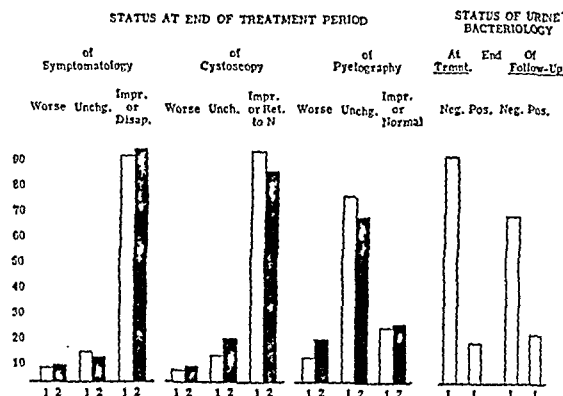


Fig. 5.—Results of treatment of genitourinary tuberculosis with two regimens of streptomycin (forty-eight Veterans Administration, Army and Navy hospitals, April 1948). The column of figures on the left shows the percentage of cases. The darkened columns indicate a regimen of 1.0 Gm. for one hundred and twenty days (26 cases) and the unshaded columns 1.8 to 2.0 Gm. for one hundred and twenty days (86 cases).

conclusion of treatment, and at the conclusion of a post-treatment observation period averaging one hundred and twenty days, were, in each instance, compared with the pretreatment roentgenograms. It will be observed that, whereas 6 per cent of the lesions were improving and 70 per cent becoming worse prior to streptomycin therapy, a definite reversal of this trend followed the administration of streptomycin; 40 per cent improved during therapy and 70 per cent showed improvement at the end of post-treatment observation. The data are capable of considerably more analysis. It would appear that lesions of the extremities responded somewhat better than those of the spine.

The same radiologic observations of these 94 patients are presented graphically in figure 4, where the shift of the curves to the right during the successive periods of observation illustrates the increasing extent and frequency of improvement during treatment and post-treatment observation.

Consensus.—Partly in view of their own observation, but chiefly in view of the roentgenologic review (table 5 and figure 4), the investigators agreed that streptomycin produced a slow but appreciable improvement in a majority of the tuberculous lesions of bone and joint. The local signs attendant on these lesions improved more rapidly, as would be expected and in a higher percentage of instances. It is planned to repeat the review of these cases at yearly intervals.

It was further agreed to institute the use of streptomycin in combination with surgical procedures in tuberculosis of the bone and joint.

TUBERCULOSIS OF THE GENITOURINARY TRACT

A year ago, bacteriologic studies on a small series of cases of genitourinary disease were incomplete. Now they are complete on a respectably large series, and their completion has increased our optimism in the case of genitourinary disease almost as much as the

9. Conducted on March 6 and 7, 1948, by Dr. Ralph K. Ghormley of the Mayo Clinic and Prof. Edward Evans of the University of Minnesota and their staffs.

observation of delayed roentgenologic changes has reversed our pessimism in the case of bone and joint disease. The results are summarized in table 6 and are illustrated in figure 5. In all 112 patients, the tuberculous causation was confirmed by positive cultures and complete cystoscopic and pyelographic studies were made prior to treatment. Both 2.0 and 1.0 Gm. per day regimens have been used, the latter only since October 1947; in no cases has treatment been completed on 0.5 Gm. dosage.

Symptomatic and cystoscopic improvement, as table 6 and figure 5 indicate, occurred in approximately 80 per cent of the patients during treatment and was much more frequently recorded as "complete" or "decided" than as "moderate" or "slight." The improvement appears to have been quantitatively greater with the 2.0 Gm. than with the 1.0 Gm. per day regimen, but the group with the latter regimen is so much the smaller in size that it seems wiser to avoid drawing such a conclusion at the present time. The pyelograms, on the other hand, were largely unaffected and, except for a uniform healing of scrotal sinuses, a majority of the genital lesions (thirty-three of sixty-three) were either unaffected or worse. The most surprising observation is that conversion by culture was obtained in 83 per cent of the 84 patients for whom these data are available.

Post-treatment observation has been carried on in the larger (2.0 Gm. per day) group for between three and twelve months in 88 per cent of the series and for more than twelve months in an additional 4 per cent. During this period, recurrence of symptoms, of cystoscopic observations and of positive urine culture, occurred in between 14 and 19 per cent of the series; approximately half of these three forms of relapse occurred within the first three months and, one may assume, without being able to determine it from the data, that they occurred in the same group of patients.

Consensus.—There was some surprise that the results were as good as they were reported to be; although the renal lesions visualized by pyelography remained substantially unchanged, cystoscopic improvement, symptomatic improvement and conversion to negative by culture occurred in more than 80 per cent of the patients during treatment, with a relapse incidence of only 15 per cent during a post-treatment observation period that exceeded three months in 92 per cent of the cases. It may be, of course, that the bacteriologic work was inaccurate; it may be that many more relapses will occur; anything may happen.

It was agreed here also to institute combined streptomycin therapy and surgical procedure.

LESIONS OF THE ALIMENTARY TRACT

Seventy patients in this group were reported to the Conference: 38 with ulcerative lesions of the tongue, buccal mucosa, tonsils or pharynx and an additional 32 with enteritis. Lesions of the oropharynx were sometimes diagnosed by biopsy, but a characteristic ulceration, in the presence of sputum proved to be positive for acid-fast bacilli by culture, was regarded as acceptable evidence of tuberculous causation. In the group with enteritis, the diagnosis was, of necessity, presumptive; in only one instance (repeatedly positive cultures of stools and negative cultures of sputum) could it be considered absolute; in the others, it was made on the basis of characteristic symptoms and roentgenographic observations in patients with proved tuberculosis else-

where in the body. The two regimens employed were 2.0 and 1.0 Gm. per day. The intramuscular route was usually employed. The duration of treatment was, usually, between sixty and one hundred and twenty days.

As table 7 indicates, thirty-six of the thirty-eight oropharyngeal lesions healed during treatment.

The clinical results of streptomycin therapy in enteritis, taken together with those in laryngitis and with the early results in meningitis, perhaps best deserve the adjective "dramatic," the use of which has been sedulously avoided thus far. Within a matter of days, the symptoms of pain, tenderness and diarrhea were relieved in all cases. If opiates were in use they could be omitted, and, if the patient was febrile, his temperature was reduced within the week. Eight patients, stated¹⁰ to be characteristic of those who were losing weight prior to treatment, gained from 15 to 40 pounds (7 to 18 Kg.), average 28 pounds (13 Kg.) in the five months following the commencement of streptomycin therapy. Improvements in the roentgenogram have been observed, but are leisurely in making their appearance, and the normal picture is not usually restored. Relapses have occurred following the relief of symptoms, although less often than would be anticipated in face of the frequency with which these patients continue to have a positive sputum culture. The oral administration of streptomycin has not been sufficiently explored to determine its worth, but, if favorable results occur, they are certainly slower in making their appearance than when the drug is injected intramuscularly.

Consensus.—The results are uniformly and remarkably favorable, and tuberculous lesions of the alimentary tract constitute one of the primary indications for streptomycin therapy. This would appear to be another example, already seen in the case of tracheobronchial and laryngeal tuberculosis, of the ease with which lesions of the mucous membrane—as opposed to those of the parenchyma—yield to the attentions of streptomycin.

LYMPHADENITIS

Thirty-six cases of tuberculous lymphadenitis, proved by aspiration or biopsy, were reported to the Conference, and the results of treatment are also summarized in table 7. Equal numbers were treated with the 2.0 and 1.0 Gm. per day regimens, both for one hundred and twenty days, and the results are indistinguishable, one from the other. In 12 patients the glands disappeared; in 18 they became smaller, and in 6 they were unchanged in size.

Because in the earlier series¹ the results had been variable, an attempt was made to distinguish acute lymphadenitis from the chronic form; the duration prior to treatment in the two groups of the present series averaged ten and fifty-six weeks, respectively. Results in acute lymphadenitis were superior in the sense that a larger proportion of the glands disappeared (recorded as "cured" in table 7), but the two groups are scarcely large enough to warrant a conclusion to this effect, however likely it may appear to be. In addition to these 36 cases, in which the glands existed without accompanying sinuses, 51 of the patients reported under the section of this report dealing with cutaneous sinuses, had lymphadenitis as well; 45 of the 51 improved, but the data do not permit a statement as to whether the lesions in these 45 disappeared or merely became smaller.

10. Mason, E. E., and others: Streptomycin in the Treatment of Tuberculous Enteritis, *Am. J. M. Sc.*, to be published.

Consensus.—It was agreed, on the basis of relatively slight experience that lymphadenitis responded reasonably well to treatment with streptomycin.

PERITONITIS

The clinical records of 27 patients, whose disease was diagnosed as tuberculous peritonitis, had been reviewed by the Veterans Administration Hospital, Washington, D. C., preliminary to publication, and an abstract of their observations was reported to the Conference.

In 9 cases, the diagnosis was proved by demonstration of acid-fast bacilli in the peritoneal cavity, either by smear, culture methods, guinea pig inoculation or biopsy sections. The diagnosis was made in 14 cases, in the absence of demonstrable bacilli, by observations in biopsy of characteristic tubercles, usually with frank caseation necrosis. On the basis of peritoneoscopy without biopsy, or of proved tuberculosis elsewhere in the body, 4 cases with clinically typical tuberculous peritonitis were included in this series, although neither bacteriologic nor pathologic confirmation of the diagnosis was obtained. Seventeen patients were treated with the 2.0 Gm. per day and 10 patients on the 1.0 Gm. per day regimen. Twenty-one of the 27 patients received streptomycin for from sixty to one hundred and fifty (usually one hundred and twenty) days, and 6 patients received it for less than sixty days. There was no obvious correlation between regimen and results.

The results (table 7) were regarded as excellent in 19 cases, with subsidence of fever, when present, complete disappearance of ascites, amelioration of abdominal symptoms and striking gain of weight. Post-treatment laparotomies were performed in 3 of these patients. In 1 of them there was striking change in the gross appearance of the peritoneum, but biopsy still revealed tuberculous tissue; in the other 2 cases there was no evidence of persisting tuberculosis. Those who are reported in table 7 as "cured" have had a post-treatment observation period in excess of six months. In some patients who presented multiple tuberculous lesions, the peritonitis responded to treatment as well or better than the other tuberculous manifestations. Three patients who recovered rapidly from the tuberculous peritoneal involvement presented tuberculous lesions elsewhere during or following streptomycin therapy. The condition in 3 additional patients was substantially unchanged during therapy, and 2 became worse, 1 of the 2 dying during a relapse that followed an initially favorable response.

Consensus.—On the basis of this small series, it was agreed that streptomycin seemed to be good medicine for acute and chronic exudative, as well as for adhesive and caseous tuberculous peritonitis.

EMPHYEMA

Thirty-five patients with empyema (but none with pleural effusion) have been treated, without benefit of protocol, with a variety of regimens and by a variety of routes. The only precise statement which can be made about them is that 22 of the 35 were unimproved (table 7).

Consensus.—A further study of this situation with uniform diagnostic methods and treatment schedules is in progress, but the chances for the successful control of tuberculous empyema with streptomycin therapy would appear to be exceedingly remote.

OTITIS MEDIA

The results of treatment in 13 cases were available to the Conference (table 7). The data disclose neither the method by which diagnosis was made nor the regimens which were employed; presumably the only route of administration was intramuscular. Drainage from the offending ear ceased in 11 cases, and in 6 of these perforations of the drum healed.

Consensus.—The number of cases is too small to permit any conclusions, but streptomycin would appear to have been useful.

PERICARDITIS AND LESIONS OF THE EYE AND SKIN

The results in 16 examples of these afflictions are reported in table 7. The individual series are unattractively small and the diagnoses frequently suspect. Since some degree of improvement was reported in 12 instances, these situations would seem to warrant further exploration.

THORACIC SURGICAL PROCEDURES

Since March of 1947, an investigation into the usefulness of streptomycin as a prophylactic in thoracic surgical procedure has been in progress in twenty-seven hospitals. The thought behind the study was that the incidence of postoperative spreads might be decreased if the surgical procedure were performed while the patients were receiving streptomycin. To this end, it was decided to administer streptomycin for seven days prior to each operation (prior to each stage in the case of a multiple stage thoracoplasty) and for fourteen days following it. These periods were chosen arbitrarily, and it could be argued that the duration of preoperative medication was not sufficiently long to reduce sputum volume and was unnecessarily long to establish adequate concentrations of streptomycin in the tissues. Nevertheless, that is what was done. In multiple stage thoracoplasties, it will be observed that this regimen resulted in continuous, or nearly continuous, treatment over considerable periods of time. It was decided to give streptomycin to every alternate patient proposed for thoracoplasty and to withhold it from the other patients to be treated by thoracoplasty. It was decided to give streptomycin to all patients subjected to pulmonary excisions and such other operations as cavernostomies, decortications and open pneumonolyses. The daily dosage was 2.0 Gm. in 64 per cent of the patients who received streptomycin (those operated on prior to October 1947) and 1.0 Gm. in the remainder. The results of the two regimens are indistinguishable from one another.

The results of this study appear in table 8; 1,559 operations have been performed on 709 patients, of whom 460 received streptomycin. The difference in the incidence of spreads between treated (2.0 per cent) and untreated (5.6 per cent) patients with thoracoplasty is statistically significant; in less than 1 out of 150 times could it have occurred by chance; there is a similar difference in the incidence of wound infections between the two groups (1.1 and 2.5 per cent, respectively). The incidence of spreads in one hundred and forty-four pulmonary excisions (lobectomy and pneumonectomy) was 2.8 per cent, and in sixty-eight other thoracic surgical operations it was 3.0 per cent.

Consensus.—It was agreed that, although the prophylactic use of streptomycin had significantly decreased the incidence of post-thoracoplasty spreads,

its routine use was not justified for this operation. This conclusion was based on the low incidence of spreads in the patients that did not receive streptomycin. The data of table 8 support the statement that six hundred and ninety-nine courses of streptomycin were given in order to prevent twenty-two spreads (the difference between fourteen and thirty-six). This not only constitutes a waste of streptomycin but has certain toxic implications and introduces the hazard of producing resistance (referred to subsequently). It was agreed that, in the routine thoracoplasty, it was preferable to withhold streptomycin and give it only if, postoperatively, a spread developed, since spreads treated in this fashion usually respond satisfactorily.

An incidence of only four postoperative spreads following one hundred and forty-four pneumonectomies and lobectomies (2.8 per cent), however, was regarded as so remarkably low that, even in the absence of an untreated series of patients, the value of streptomycin therapy was believed to have been reasonably well demonstrated. It was therefore agreed that the routine use of streptomycin should be continued in these and in other thoracic operations excepting thoracoplasty. This conclusion was influenced by the fact that the operations had been conducted, not by a single surgeon in a single hospital, but by twenty-seven surgeons in twenty-seven hospitals.

TOXICITY

The usefulness of a drug depends on the ratio between its therapeutic efficacy and its toxicity. There are many drugs which might be used to kill many microorganisms, if they did not have the unfortunate side effect of killing the host. As has been repeatedly remarked in the previous sections of this report, and as is rather crudely portrayed in figure 6, there is, with the possible exception of genitourinary tuberculosis, no detectable loss of therapeutic efficacy as the daily dose of streptomycin is reduced from 2.0 to 1.0 Gm. Indeed, although this must be stated more tentatively since

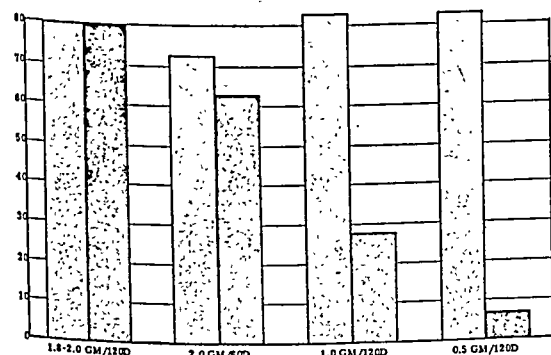


Fig. 6.—Therapeutic efficacy and toxicity with different regimens of streptomycin (forty-eight Veterans Administration, Army and Navy hospitals, April 1948). The column of figures at the left shows the percentage of patients, and the figures at the bottom relate to the regimen. The columns of light shading represent therapeutic efficacy; the columns of dark shading indicates vertigo.

it is based on fewer cases and briefer experience, it would appear that no loss follows a further reduction to 0.5 Gm. It is, therefore, particularly gratifying to find (table 9 and figure 6) that a very definite decrease in toxicity accompanies these reductions in dose. While this reduction might have been anticipated on general grounds, it is important and satisfying to have the point proved.

The more important and conspicuous toxic manifestations have been selected for presentation in table 9. The less important ones, such as nausea and vomiting, paresthesia, contact dermatitis and the like, have been purposely omitted. It will be observed that the more important and the more decided derangements diminish

TABLE 9.—Toxic Manifestations of Streptomycin Encountered In Treatment of 1751 Patients with Tuberculosis

	Regimen Employed				
	1.8-2.0 Gm. (5 i.d.)	2.0 Gm. (5 i.d.)	1.0 Gm. (5 i.d.)	1.0 Gm. (2 i.d.)	0.5 Gm. (2 i.d.)
	120 Days	60 Days	120 Days	120 Days	120 Days
Number of patients treated *	671	177	321	445	137
Toxicity	Incidence (Percentage)				
Completed cessation treatment	9.0	6.4	5.0	2.0	0.0
Vertigo	80.0	62.7	34.3	23.1	5.8
Ataxia	45.0	26.0	20.6	11.5	2.9
Caloric stimulation, absent response	31.1	41.2	10.3	5.4	0.0
Caloric stimulation, diminished response	27.1	34.7	23.9	25.2	22.8
Hearing diminished, voice	2.7	0.6	0.3	0.2	0.0
Hearing diminished, audiometer	13.8	19.2	4.0	9.5	11.7
Renal function, diminished	9.2	10.8	7.8	5.8	2.2
Albuminuria	24.4	19.8	17.1	11.0	15.3
Dermatitis, severe	4.6	1.1	1.2	1.1	0.7
Dermatitis, mild	10.0	5.6	5.6	4.7	2.2
Eosinophilia, >6 per cent	63.5	49.2	36.8	34.6	31.5
Fever	5.7	2.8	0.0	1.8	0.0
Blood dyscrasia	0.6	2.3	0.9	0.7	0.7

* These figures differ from those of table 1 because, on the one hand, cases of the military-meningitis and the thoracic operation series have been excluded and because, on the other hand, certain material was suitable for inclusion which had to be omitted from table 1. An error has been deliberately introduced into column 5 (0.5 Gm.) by adding patients who had not yet completed their final sixty days of treatment.

successively from left to right until, under the 0.5 Gm. per day regimen, there are still represented by conspicuous percentages only such minor manifestations as diminished response to caloric stimulation, a decrease in acuity of hearing as observed by audiometer, albuminuria, and eosinophilia. In a negligible series of 8 cases in which treatment has been completed with 0.2 Gm. per day for one hundred and twenty days, there is a column of zeros until one finds the figure "2" opposite eosinophilia.

The individual toxic manifestations have been sufficiently discussed in the previous report¹ and elsewhere.¹¹ Little would be gained by further discussion here. It is most unfortunate that no data were gathered for the Conference concerning the frequency and degree of incapacity which persists in patients who suffered that extraordinarily specific damage to vestibular function which is manifested by vertigo and for which no pathologic basis has thus far been found. Certainly some of these patients still experience difficulty in walking in the dark and would, presumably, be even more seriously incapacitated were they blinded; certainly some of them experience a difficulty in focusing their eyes after sharp movements of the head, which may produce a degree of incapacity and may expose them to such specific dangers as would be encountered in crossing a traffic-crowded street. One general observation may be made in connection with table 9. The important toxic manifestations are, rather generally, less when a daily dose of 1.0 Gm. is divided into two injections (column 4) than when it is divided into

11. Farrington, R. F.; Hull-Smith, H.; Bunn, P. A., and McDermott, W.: Streptomycin Toxicity, J. A. M. A. 134: 679-688 (June 21) 1947.

five injections (column 3). This has led to the suggestion that toxicity is a function of maintained plasma concentrations of streptomycin rather than of occasional peaks of concentration.

In preparing figure 6, vertigo was selected to represent toxic manifestations because of its frequency and importance in the higher dosage regimens. The lightly shaded columns representing therapeutic efficacy are believed to be substantially true, but contain certain inaccuracies: thus, roentgenologic improvement has been arbitrarily taken as an indication of efficacy in pulmonary disease and cystoscopic improvement as the same criterion of efficacy in genitourinary disease; it is also to be remarked that the column representing the 2.0 Gm. per day for sixty days regimen is based almost entirely on cases of pulmonary tuberculosis and that the column representing the 0.5 Gm. per day regimen is based on relatively few cases. Nonetheless, the figure has the virtue of presenting, in rather striking fashion, a relationship which existing evidence would appear to have established.

DEVELOPMENT OF RESISTANCE TO STREPTOMYCIN BY MYCOBACTERIUM TUBERCULOSIS

A second difficulty connected with prolonged streptomycin therapy—a difficulty which, if not peculiar to streptomycin, is at least unusually prominent in its case—is the resistance which tubercle bacilli develop to it. Figure 7 shows the time relationship with which this resistance developed in 2,100 positive cultures. At the beginning of treatment 97 per cent of 745 cultures failed to grow when they were exposed in vitro to 10 micrograms or less of streptomycin per cubic centimeter of medium,¹² and the vast majority failed to grow in 1 microgram per cubic centimeter. After treatment was started, and particularly after it had been continued for thirty to forty-five days, an increasing percentage of positive cultures grew in more than 10 micrograms per cubic centimeter, until, after one hun-

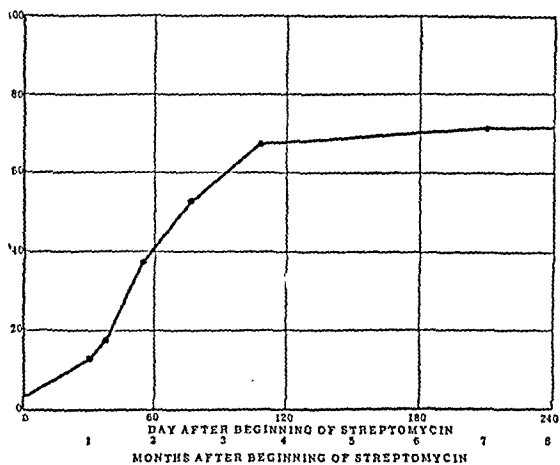


Fig. 7.—Development of resistance by *Mycobacterium tuberculosis* to streptomycin (twenty-three Veterans Administration and Navy hospitals, April 1948). The column of figures at the left shows the percentage of cultures resistant to more than 10 micrograms per cubic centimeter of medium.

dred and twenty days of treatment, about 70 per cent of the cultures did so (fig. 7). A majority of these resistant cultures grew in more than 100 micrograms per cubic centimeter, and many of them in more than

12. This figure is rather arbitrarily selected as a criterion of resistance since it represents the average blood concentration from four to six hours after the intramuscular injection of 0.5 Gm. of streptomycin.

1,000 micrograms per cubic centimeter. Figure 7 is constructed from data obtained from twenty-three laboratories using daily doses varying from 0.5 Gm. to 2.0 Gm. It is not broken down by regimens because the several laboratories are in disagreement as to the differences which changes in dosage produce. It is

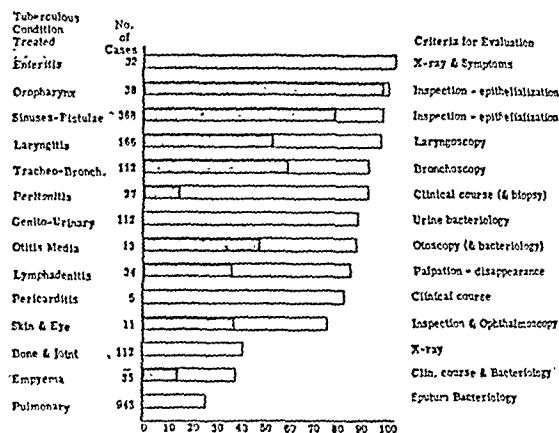


Fig. 8.—Results of streptomycin therapy in various tuberculous conditions at the end of treatment (forty-eight Veterans Administration, Army and Navy hospitals, April 1948). The horizontal row of figures at the bottom of the illustration shows the percentage of patients "healed" (notched part of bar) and "improved" (plain part of bar).¹³

believed that the differences are minor and that the form of the curve is substantially the same for all regimens thus far employed. Successive cultures from the same patient usually grow in progressively higher concentrations of streptomycin as treatment is continued. Once resistance is acquired it is apparently "permanent," within the time limits of the study; the occasional instance in which, resistance having been developed, subsequent cultures become again "sensitive" to streptomycin may well be due to a technical error in the determination rather than to a true loss of resistance *per se*; the final answer to this question is not yet available. There is only one recorded instance of a culture of *Mycobacterium tuberculosis* having become dependent on streptomycin to maintain growth.

The vitally important question which this observation poses is whether the observation that tubercle bacilli from a given patient are resistant to, say, 100 micrograms per cubic centimeter in vitro means that all the tubercle bacilli within the patient are similarly resistant and the administration of streptomycin correspondingly useless. In the guinea pig, this question can be answered in the affirmative¹⁴; when animals are inoculated with streptomycin-resistant micro-organisms, they do not respond to treatment with streptomycin and, in fact, appear to die rather more rapidly than do their controls. In human beings, the question cannot be answered definitely at the present time. The answer is not necessarily affirmative; it may be, for example,

13. Steenken, W., Jr.: Resistance: Minutes of the Fourth Streptomycin Conference, St. Louis, Veterans Administration, May 1, 2 and 3, 1947, pp. 52-56. Feldman, W. H.; Karlson, A. G., and Hinshaw, H. C.: Streptomycin Resistant Tubercle Bacilli: Effects of Resistance on Therapeutic Results in Tuberculous Guinea Pigs, *Am. Rev. Tuberc.* LVII: 162-174 (Feb.) 1948.

14. Figure 8 represents an attempt to indicate, graphically, the relative therapeutic effectiveness of streptomycin in various types of tuberculosis. The criteria selected for evaluation of effectiveness are mentioned in each instance, but it should be emphasized that any change in these criteria would decidedly alter both the height and the shading of the individual columns; thus, the acceptance of roentgenologic improvement instead of sputum conversion would increase the "pulmonary" column from 25 to 80 per cent and the inclusion of a post-treatment observation period would nearly double the height of the "bone and joint" column. Its information, therefore, is general rather than specific; its usefulness is qualitative rather than quantitative.

that the inoculum contained a large percentage of sensitive organisms and that an occasional resistant organism was responsible for the observed growth; it may be that the sputum giving rise to the resistant culture was derived from a particular *locus* and that organisms in other *loci* are still sensitive; it may even be that the observation has no merit whatever and that the reaction of micro-organisms to streptomycin is altogether different *in vivo* and *in vitro*. On the other hand, there is an accumulating mass of evidence, no one piece decisive of itself, which indicates that the observation has very real clinical significance and that the observation of a resistant culture—unfortunately, several months later—indicates that further treatment with streptomycin is useless and, conceivably, dangerous. The fact that improvement is most rapid during the first two months, before resistance has developed, argues in this direction, as does the apparent parallelism in timing between the observation of a positive culture and the occurrence of a relapse.

Assuming that the observation has significance, that a resistant culture means a resistant patient, the public health hazard which it involves is rather obvious; all new cases of tuberculosis which are contracted from streptomycin-resistant patients become *ipso facto* unsuitable for treatment with streptomycin. Repeating the assumption, the prime question is then concerned with how to avoid the situation. It cannot be avoided by decreasing the dose within the range thus far studied, and one can scarcely expect to go much below 0.5 Gm. per day without losing therapeutic efficacy. Toxicity prohibits increasing the dose. If it be due to the development of mutants as a result of prolonged exposure to streptomycin, it could be avoided by decreasing the duration of that exposure. If, on the other hand, it be due to the survival and multiplication of a few initially resistant strains, it is difficult to see why shortening the course of treatment to thirty or forty-two days would be of benefit; one would be driven to think in terms of another drug to which these strains would not be resistant. The answer awaits the experiment.

SUMMARY AND CONCLUSIONS

This paper has been in the nature of a second annual progress report on a cooperative investigation which has been carried on by the Veterans Administration, Army and Navy since June 1946. During this period, 2,780 patients with all the tuberculous ills to which flesh is heir (table 1) have completed treatment with streptomycin in forty-eight hospitals. This report has behind it, then, the weight of numbers. It has the advantage of dealing with patients whose diagnoses have been definitely established and who have been treated by uniform regimens. It has the inaccuracies—minor it is believed—which result from material derived by questionnaire.

The most significant practical development of the past year is concerned with new regimens. It has been found possible to reduce the daily dose of 2.0 Gm. for one hundred and twenty days, to 1.0 Gm. for the same period, with a decided reduction in toxicity and without detectable loss of therapeutic efficacy (table 9 and fig. 6). This reduced dosage is as effective when given in two daily injections as in five, suggesting that the supposed necessity of a steadily maintained blood concentration is, in these circumstances, a shibboleth. A further reduction in daily dosage to 0.5 Gm. has been tried in over 100 cases with a definite further reduction in toxic manifestations; it remains to be proved whether there is a concomitant reduction in

efficacy, but, if it occurs, it would not appear to be very significant. A daily dose of 0.2 Gm. is being tried by five hospitals in a group of patients with draining cutaneous sinuses. A reduction in the other regimen factor—that of duration rather than dose—was studied by reducing the duration of treatment to sixty days while maintaining the daily dosage at 2.0 Gm. This also was accomplished without any observable diminution in effectiveness. Observing the practicability of reducing either dosage or duration, the Fifth Streptomycin Conference decided to explore the results of reducing both factors simultaneously and adopted, for the next few months, two regimens which prescribe 1.0 Gm. and 0.5 Gm. daily for forty-two days. The prime question, of course, is how much, or how little, loss of therapeutic efficacy will accompany the adoption of those protocols.

With the disadvantage of toxicity thus alleviated, if not removed, the main bugaboo of streptomycin therapy lies in the development of resistance by the tubercle bacilli to its action. It is this factor which makes one reluctant to give streptomycin for minimal tuberculosis, or any other lesion which may be expected to respond favorably to other forms of treatment, lest one be faced with a life-threatening episode at some time in the future and be unable to use streptomycin with any likelihood of success. The Conference decided to investigate the effect of the shorter (forty-two day) regimen and of combining streptomycin with "promizole" (4,2'-diaminodiphenyl-5'-thiazolylsulfone) and para-aminosalicylic acid and of giving interrupted courses of streptomycin (two weeks "on" and two weeks "off") on the development of resistance. The Conference felt itself to be rather groping in the dark without more fundamental knowledge concerning the nature of the process.

The Conference felt that the indications and contraindications for streptomycin as a prophylactic in thoracic operations had been established during the year. It felt that its judgment concerning the position of streptomycin in the treatment of various types of tuberculosis had been, in most respects, strengthened rather than altered by the experience of the past year (fig. 8). The new evidence adduced in the case of genitourinary and orthopedic tuberculosis made the prospects rather brighter in those fields. In other respects, superficial lesions involving the skin and mucous membranes (i. e., sinus and fistulous tracts, alimentary tract, tracheobronchial tree and peritoneum) continued to heal or to improve remarkably, and, occasionally, to reappear. In miliary and meningeal tuberculosis the early results of treatment continue to be startling, and the late results continue to be much less so. In the main infection, pulmonary tuberculosis, streptomycin therapy in conjunction with bed rest is still regarded as a useful adjuvant to other forms of treatment. Its ability to reverse the trend of progressive exudative lesions has been observed in about 80 per cent of patients treated with all regimens, and this observation has, twice during the year, been confirmed by the judgment of "juries." Occasionally the clearing is complete and streptomycin ranks as definitive therapy. In the great majority of instances the clearing is incomplete and, often, only temporary; in these circumstances, the role of streptomycin would appear to be to make possible the use of collapse procedures which, in the absence of streptomycin therapy, would have had to be delayed or could never have been performed.

On the whole, streptomycin therapy has been helpful.

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SATURDAY, OCTOBER 23, 1948

NEW TRENDS IN CANCER CONTROL

While clinical and experimental efforts toward achieving effective control of cancer, through improved diagnostic and therapeutic methods, have had a measured amount of success, the condition is not yet conquered as smallpox and typhoid have been controlled.

The far reaching control of the infectious diseases attained during the past seventy-five years depended on the successful identification of the causative microorganisms and on extensive and laborious epidemiologic studies. As long as the specific causative agents responsible for over 99 per cent of human cancer remain unknown, rapid progress cannot be made.

Although many important and, apparently, fundamental differences exist between infectious diseases and cancer, their similarities also are numerous. Observations as to the number and types of extrinsic carcinogenic factors suggest that exogenous and endogenous carcinogens may include agents differing as widely as those concerned with infectious diseases. The recently discovered species specificity of carcinogenic agents is analogous to the species-specific pathogenicity of microorganisms in infections. The carcinogens, moreover, share with these the differences in pathogenic potency which are characteristic for the individual pathogenic agents.

Paralleling the different reaction products in infectious diseases, and reflecting changes in the reactivity of the tissues of the host to the infecting agent (tuberculosis, syphilis, etc.), extrinsic carcinogens elicit similarly various histologic responses in the host, such as hyperplasia (hyperkeratosis, warts, nodular adenomatoid proliferations), simple tumors and cancers. (Clinical as well as experimental evidence shows that in both infectious diseases and cancer the sites of the anatomic responses are determined not only by the properties of the particular pathogenic agent in question, but also by the type or route of contact with it. The conditions of exposure which decide the development of tuberculo-

sis of the lungs and of the intestine (inhalation and ingestion, respectively) are fundamentally not different from those which are responsible for development of cancer in various sites after exposure to radioactive material by different routes; e.g., skin contact, inhalation, ingestion, parenteral administration.

An additional resemblance between cancer and infectious diseases is the fact that the degree of pathogenicity of the causative agents is only in part an intrinsic quality, as it depends to some extent also on the intensity and duration of exposure to them. Thus, the incidence of cancer of the bladder among workers in dye plants is highest among those most massively exposed to aromatic amines and decreases among other operatives of such manufactures in proportion to the degree to which they come in contact with highly potent carcinogens. Epidemiologic investigations have shown that a similar crowding of tuberculous infection occurs around persons with active and open tuberculosis of the lung. The epidemiologic pattern of the spread of occupational cancer and infectious diseases from foci where their causative agents are generated is similar. For the control of cancer, this fact is of special importance. The progressive march of occupational cancers through all industrialized countries paralleling the development of industries and the continuous creation of new industrial products of often unknown biologic properties are factors which tend to result in the establishment of an increasing number and variety of extrinsic carcinogenic foci. Since the character of a particular carcinogenic agent as well as the type of exposure to it determines the site of the resulting cancer, this development may be followed in the course of time by a change in the quantitative and qualitative aspects of the environmental carcinogenic spectrum, and thereby in the incidence rate of cancer with respect to total numbers and sites in different regions of the country. An effective control of cancer depends on determination of the causes and directions of such trends. The repetition of the survey in ten different metropolitan areas in the United States for cancer morbidity, done first ten years ago and to be done again during this summer by the cancer control branch of the National Cancer Institute, assumes special significance in the light of these considerations.¹

The recent creation of the environmental cancer section within the cancer control branch provides an organization through which the epidemiologic studies are to be supplemented by investigations into the extrinsic causative factors of human cancer as they are related to occupation, medicinal agents, diet, climate, customs, habits and parasitic infections. The third development in this field is represented by a project developed by the New York State Industrial Cancer Committee com-

1. Cancer Control Letter, Federal Security Agency, National Cancer Institute, no. 3, April 23, 1948, and no. 4, May 7, 1948.

posed of representatives of the Division of Industrial Hygiene, New York State Department of Labor, New York State Health Department, the Roswell Park Memorial Institute, Buffalo, and the cancer control branch of the National Cancer Institute. The occupational histories of several thousand patients with cancer seen at the Roswell Park Memorial Institute are to be determined in detail and are to be analyzed for previous occupational cancer hazards sustained by these patients.

ANTI-ANEMIC PROPERTIES OF VITAMIN B₁₂

Shorh¹ in 1947 reported finding in refined liver extracts a factor required by *Lactobacillus lactis* Dorner (L. L. D. factor) which was present in an almost linear relationship to the unit potency of the extracts used in the treatment of pernicious anemia. Rickes² and his associates have isolated from liver a crystalline compound, vitamin B₁₂, and Shorh, who assayed its potency value for *L. lactis* Dorner, considered it to be either wholly or partially responsible for the *L. lactis* Dorner growth activity observed for liver extracts. West³ reported a positive hematologic response in 3 patients with pernicious anemia following the intramuscular administration of vitamin B₁₂ in single doses of 3, 6 and 150 micrograms. Spies,⁴ in 1948, reported on the use of crystalline vitamin B₁₂ in the treatment of Addisonian pernicious anemia in 2 cases, nutritional macrocytic anemia in 2 cases and nontropical sprue in 1 case. In each of the 5 patients there was a striking clinical improvement, which included an increase in their feeling of well-being, mental alertness, strength and vigor and complete relief of the soreness and burning of the mouth and tongue. This was followed by an increase in red blood cells and hemoglobin and in all except 1 case of nutritional macrocytic anemia in white blood cells. One patient with pernicious anemia stated on the fifth day of treatment that the paresthesia and pains of the extremities and physical signs of tenderness and hyperesthesia of four weeks' duration had definitely diminished.

Castle⁵ and his associates treated a patient with pernicious anemia in relapse and acute combined system disease that developed during irregular treatment with synthetic pteroylglutamic acid. A hematologic remission and rapid and decided improvement in the

neurologic picture followed treatment with crystalline vitamin B₁₂. The patient showed severe local and systemic sensitivity reaction to purified liver extracts derived from both pork and beef, but not to vitamin B₁₂. These authors conclude that vitamin B₁₂ should prove effective against the neurologic as well as hematologic manifestations of pernicious anemia. They also suggest that vitamin B₁₂ is not responsible for sensitivity reactions to liver extracts.

Spies⁶ and his associates studied the question of the relation of gastric achlorhydria and subacute combined degeneration of the spinal cord in macrocytic anemias. A two year study of the effect of synthetic folic acid in persons with macrocytic anemia confirmed and extended previous observations that folic acid is an effective anti-anemia substance capable of producing a clinical response of hematologic remission in persons with nutritional macrocytic anemia, tropical sprue and macrocytic anemia of pellagra and pregnancy. However, folic acid will not prevent the development of neural disturbances in persons with Addisonian pernicious anemia. Twenty-eight of the 30 patients in this study who were observed over a period of two years showed subacute combined degeneration. Irrespective of how much folic acid was administered to these persons the condition became worse. Administration of massive liver extract therapy promptly relieved the neural disturbances. In every instance in which subacute combined degeneration of the spinal cord developed in this series, gastric achlorhydria was revealed in repeated tests following histamine stimulation, prior to folic acid therapy. Persons with nutritional macrocytic anemia of tropical sprue or of pregnancy did not have histamine refractory achlorhydria either previous to or during therapy with folic acid, and in no instance did any evidence of subacute combined degeneration develop. In a series of 3 patients with achlorhydria, pernicious anemia and subacute combined degeneration of the spinal cord, all had relief of symptoms after the parenteral injection of 15 micrograms of vitamin B₁₂. The subjective improvement in all 3 patients was remarkable, and in the case in which the disease was most acute there was considerable improvement in all physical signs.

The experiences of these authors suggest that vitamin deficiency diseases tend to be multiple in nature. The administration of a specific vitamin corrects for a deficiency of that vitamin and often aids in improving the general health and well-being of the patient, but it cannot correct a deficiency of all of the essential dietary nutrients.

1. Shorh, Mary S.: Activity of Vitamin B₁₂ for the Growth of *Lactobacillus lactis*, *Science* **107**: 397-398 (April 16) 1948.

2. Rickes, E. L.; Brink, N. G.; Koniuszy, F. R.; Wood, T. R., and Folkers, K.: Crystalline Vitamin B₁₂, *Science* **107**: 396-397 (April 16) 1948.

3. West, R.: Activity of Vitamin B₁₂ in Addisonian Pernicious Anemia, *Science* **107**: 398 (April 16) 1948.

4. Spies, T. D.; Stone, R. E., and Aramburu, T.: Observations on the Anti-anemic Properties of Vitamin B₁₂, *South M. J.* **41**: 522-523 (June) 1948.

5. Berk, L.; Denny-Brown, D.; Finland, M., and Castle, W. B.: Effectiveness of Vitamin B₁₂ in Combined System Disease, *New England J. Med.* **239**: 328-330 (Aug. 26) 1948.

6. Spies, T. D.; Stone, R. E.; Garcia Lopez, G.; Milanes, F.; Aramburu, T., and Lopez Toca, R.: The Association Between Gastric Achlorhydria and Subacute Combined Degeneration of the Spinal Cord, *Postgrad. Med.* **4**: 89-95 (Aug.) 1948.

Current Comment

HEPATIC LOCALIZATION OF EMETINE HYDROCHLORIDE

While emetine hydrochloride is efficient in the treatment of amebic hepatitis, it is less reliable in the treatment of amebic dysentery. Despite its ability to clear up the acute symptoms, relapses frequently occur. A logical explanation of this failure is offered by Palmer,¹ of the Army Medical Center, Washington, D. C., from his study of the topographic distribution of emetine in laboratory animals. Twenty-four albino rabbits each received intramuscularly injections with 6 mg. per kilogram of body weight of emetine hydrochloride. At various intervals after the injection emetine assays were made of the liver and intestinal walls. At the end of one hour 24.9 mg. per kilogram were found in the liver. At this time there was only a concentration of 5.5 mg. per kilogram in the large intestinal walls. The concentration in the liver increased to a maximum of 41.6 mg. per kilogram by the end of twelve hours. The intestinal concentration fell to 1.7 mg. per kilogram by the end of this time. At the end of four days the concentration in the liver was 15.4 mg. per kilogram, while the intestinal concentration had already fallen to 1.2 mg. per kilogram. The intestinal titer became zero by the sixth day and remained at this low level till the end of the experiment (twenty-eight days). The twenty-eighth day reading for the liver was 1.0 mg. per kilogram. This high concentration and prolonged presence of emetine in the liver and low concentration and transient presence in the intestinal wall are offered by Palmer as an explanation for the efficiency of the drug in the treatment of amebic hepatic disease and its relative failure in the treatment of amebic intestinal disease.

NYLON BRIDGE FOR NERVE GAPS

Working with small mammals, Weiss and Taylor² of the Department of Zoology, University of Chicago, developed a new technic for bridging nerve gaps. Connection was made between the nerve stumps by means of a fiber cable embedded in a tubular blood clot. The Weiss technic has been tested on larger animals by Alexander³ and his associates of the Department of Surgery, Harvard University. Five adult *Macaca rhesus* monkeys were operated on by the Harvard group. A section of the tibial nerve was excised from each animal and the nerve stumps allowed to retract. A segment of the internal jugular vein was threaded over the proximal nerve stump. The desired length of the gap was fixed without tension by a tantalum sling stitch. The nerve stumps were then connected axially by a cable of finest nylon fibers. A trough of polyethylene tubing of nerve caliber was placed under the

cable and filled with freshly drawn venous blood. After a firm clot had been formed the trough was removed. The sleeve of the vein was then pulled over the bridged gap and anchored to each nerve stump by a silk stitch. The operative wounds were closed with silk sutures and the animals set free in large cases. Recovery was uneventful. Ten months later the limb was apparently fully restored to functional use. After being freed from moderate adhesions under pentobarbital sodium anesthesia, each bridge presented itself as an elongated swelling of the nerve to one and a half to two times its initial diameter. Electrical stimulation of the nerve above and below the bridge gave in all cases a good contraction of the gastrocnemius, posterior tibial and long flexor muscles of the foot. After severance of the Achilles tendon, there were in 2 cases no perceptible responses of the intrinsic foot muscles, in 2 cases fibrillary twitchings and in 1 case normal contractions of these muscles. Weight of the reinnervated gastrocnemius muscle was on an average 85 per cent normal. Histologic examinations showed that the regenerated distal nerve stumps contained about 90 per cent of their normal quota of fibers. The diameters of the regenerated nerve fibers, however, were subnormal, few reaching the 8 to 9 micra class. While Young³ has expressed the belief that permanently subnormal nerve calibers cause some deficiencies in function, such theoretical deficiencies were not severe enough to be demonstrable in the 5 cases examined. The nerve gaps bridged in the Harvard series varied from 22 to 32 mm. in length. Alexander has expressed the belief, however, that one could lengthen the gaps without making them unbridgeable.

INCREASE IN THE QUANTITY OF MEDICAL CARE

Elsewhere in this issue is a summary of Bulletin 66, on the cost and quantity of medical care in the United States, recently published by the Bureau of Medical Economic Research. Examination of the trends in total consumer expenditures reveals that 4 per cent of the average family budget goes for medical care and that this percentage has been slowly declining in recent years. While the cost of living increased about 59 per cent from the base period 1935-1939 to 1947, the price (fees) of medical care items, however, increased only 32 per cent. Analysis of the average dollar spent for medical care indicates that the physician's share has declined from 32 cents in 1929 to 25 cents in 1947, while that of hospitals has increased from 13 cents to 21 cents during the same period. The bulletin adds to the literature of medical economics a set of estimates showing the phenomenal increase since 1940 in the quantity of medical care rendered the American people. The quantity of medical care has increased much faster than the number of physicians. This increase is particularly significant in the light of current charges regarding the alleged shortage of physicians.

1. Palmer, L. G.: *Proc. Soc. Exper. Biol. & Med.* **68**: 362 (June) 1948.

2. Weiss, P., and Taylor, A. C.: *J. Neurosurg.* **3**: 375, 1946.

3. Alexander, E., Jr.; Woods, R. P., and Weiss, P.: *Proc. Soc. Exper. Biol. & Med.* **68**: 380, 1948.

3. Young, J. F.: *Physiol. Rev.* **22**: 318, 1942.

ORGANIZATION SECTION

Official Notes

GRANTS TO AID RESEARCH

The Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research in problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. As a rule grants are not made for the purchase or acquisition of equipment or apparatus of a permanent nature. For information, address the committee at 535 North Dearborn Street, Chicago 10.

Coming Medical Meetings

American Medical Association Interim Session, St. Louis, Municipal Auditorium, Nov. 30-Dec. 3. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Conference of State Secretaries and Editors, St. Louis, Hotel Statler, Nov. 28-29. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

National Medical Public Relations Conference, St. Louis, Hotel Statler, Nov. 27. Mr. Lawrence W. Rember, 535 N. Dearborn St., Chicago 10, Director.

American Academy of Dermatology and Syphilology, Chicago, Palmer House, Dec. 5-9. Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, Secretary.

American Academy of Pediatrics, Atlantic City, Chalfonte-Haddon Hall, Nov. 20-23. Dr. Clifford G. Grullee, 636 Church St., Evanston, Ill., Secretary.

American Association of Railway Surgeons, Chicago, Nov. 21-23. Dr. Raymond B. Kepner, 547 W. Jackson Blvd., Chicago 6, Secretary.

American Clinical and Climatological Association, Hot Springs, Va., The Homestead, Nov. 8-10. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American Public Health Association, Boston, Nov. 8-12. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Oct. 31-Nov. 1. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Anesthesiologists, St. Louis, Hotel Statler, Nov. 4-6. Mr. John H. Hunt, 188 W. Randolph St., Chicago 1, Executive Secretary.

Association for Research in Nervous and Mental Diseases, New York, Waldorf-Astoria Hotel, Dec. 10-11. Dr. Clarence C. Hare, 700 W. 168th St., New York 32, Secretary.

Association of Military Surgeons of the United States, San Antonio, Texas, Nov. 11-13. Dr. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Indiana State Medical Association, Indianapolis, Oct. 26-28. Mr. Ray E. Smith, 23 E. Ohio St., Indianapolis 4, Executive Secretary.

International College of Surgeons, U. S. Chapter, St. Louis, Kiel Auditorium, Nov. 16-19. Mr. Ralph E. Osborne, 1516 Lake Shore Drive, Chicago, Business Secretary.

Inter-State Postgraduate Medical Association of North America, International Medical Assembly, Cleveland, Public Auditorium, Nov. 9-12. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.

Oklahoma City Clinical Society, Oklahoma City, Biltmore Hotel, Oct. 25-28. Mrs. M. R. Waller, 512 Medical Arts Bldg., Oklahoma City, Executive Secretary.

Omaha Mid-West Clinical Society, Omaha, Hotel Paxton, Oct. 25-29. Dr. John M. Thomas, 1031 Medical Arts Bldg., Omaha 2, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 10-12. Dr. J. Basora Deñillo, Box 3866, Santurce, Secretary.

Radiological Society of North America, San Francisco, Dec. 5-10. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 7-9. Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Southwestern Medical Association, El Paso, Texas, Oct. 28-30. Dr. Wickliffe R. Curtis, First National Bank Bldg., El Paso, Secretary.

Western Surgical Association, St. Louis, Dec. 2-4. Dr. Warren H. Cole, 1853 W. Polk St., Chicago 12, Secretary.

Washington Letter

(From a Special Correspondent)

Oct. 21, 1948.

Flies Becoming DDT-Resistant

Simultaneously with disclosure by Public Health Service that the housefly transmits acute diarrheal disease is presentation of evidence by the Department of Agriculture that resistance to DDT is developing in this insect, at least in certain sections of the country. Latest issue of the weekly *Public Health Reports* carries the results of a two year study conducted in Hidalgo County, Texas, which show that incidence of *Shigella* infections was decidedly reduced in town where there were periodic sprayings of DDT. The rate was unchanged in those towns that were untreated. But when treated and untreated areas were reversed, diarrheal incidence soon became reversed, confirming the theory that fly population bears a close relation to this particular disease problem.

According to the Department of Agriculture, reports from more than twenty-five states indicate that DDT is failing to control houseflies in certain isolated areas. Similar reports have been received from Egypt and Greece. Recent field studies by federal entomologists demonstrated that some strains of flies are now killed with a longer period of contact with DDT. There is still no evidence, however, that a comparable resistance has developed in other species of insect.

Navy Alone Employs 19,000 Disabled Veterans

The naval establishment has about 19,000 disabled war veterans on its payroll, according to an inventory, the findings of which were announced to coincide with "National Employ the Physically Handicapped Week," October 3-9. For example, 16 per cent of the 2,617 civilian employees at the Naval Ammunition Depot in Crane, Ind., are disabled veterans, as are 15 per cent of the 1,730 workers at a similar depot at McAlester, Okla. "There is more public interest today in the physically handicapped than ever before," said Dr. Ross T. McIntire, chairman of the President's Committee, which sponsors nationwide observance of the special week.

Chile Now Eligible for Oak Ridge Radioisotopes

Chile has become the twenty-second foreign nation to qualify as a beneficiary of Atomic Energy Commission's radioisotope distribution program. Sixteen of the twenty-two have already received shipments, the latest being France, consignee of carbon 14, which left Oak Ridge October 1 for use at Laboratoire de l'Institut du Radium, Paris, in cancer research. Newest isotopes to be placed on the Atomic Energy Commission's distribution list are hydrogen 3 and helium 3.

Woman's Auxiliary

1948 CONFERENCE—WOMAN'S AUXILIARY

The fifth annual Conference of the Woman's Auxiliary to the American Medical Association will be held in Chicago, Thursday and Friday, November 4-5, 1948, at the Hotel Sherman. In attendance at the Conference will be the presidents and presidents-elect of the forty-eight county auxiliaries and the national officers and chairmen of standing committees.

Guest speakers will include Dr. Louis Bauer, of New York, Mr. Thomas Hendricks, Dr. Frank G. Dickinson, Dr. Fred W. Hein and Mr. William Doscher of the American Medical Association.

The members of the executive committee of the Board of Trustees of the American Medical Association will be guests of the Conference at luncheon on Friday, November 5.

GOVERNMENT SERVICES

ARMY

HOSPITAL RESERVE UNIT ACTIVATED

The 427th General Hospital, a 1,000 bed hospital reserve unit, has been activated by the Army, under the sponsorship of the University of Illinois College of Medicine, Chicago, and Dr. John B. Youmans, dean of the College of Medicine and a colonel in the Medical Corps Reserve, has been appointed commanding officer.

The class "C" type service unit will consist of a full complement of officers. The commissioned personnel will include 55 medical, dental and administrative officers and 83 nurses. Monthly training periods have been planned for personnel assigned to the hospital. Dr. Youmans has announced that Dr. George V. Byfield has been appointed chief of medical service for the hospital, while Dr. William E. Looby will be chief of the surgical service. Drs. Byfield and Looby are members of the University of Illinois faculty and serve on the staff of the Veterans Administration hospital at Hines, Ill. Others who have been appointed are Victor E. Nicklas, as adjutant, and Joseph W. Harney, as psychologist. The 427th is one of two general hospitals sponsored by institutions in the Chicago area which have been activated. The 297th General Hospital has been organized under the sponsorship of Cook County Hospital.

LOW MORTALITY RATES AND THE NEED FOR PHYSICIANS

The Secretary of the Army, Kenneth C. Royall, announced October 1 that sickness and mortality rates in the Army today are at the lowest peacetime level, a remarkable fact, he said, in view of the worldwide deployment of servicemen, many of whom

are stationed in areas where disease hazards are great. Secretary Royall said that many factors have contributed to this high health level of American troops; for example, the incidence of venereal disease has been reduced to about one half of what it was in 1946, common diseases of the respiratory tract are at their lowest level, and the dysenteries and insect-borne diseases have been less prevalent. These improvements were due largely to preventive medicine practices which have been developed and integrated into the military medical program, including such items as better measures for insect and rodent control, immunization and maintenance of optimum diet.

Secretary Royall also pointed out that, between now and the end of next June, more than 3,900 medical officers will be needed from civilian life to maintain the health of our soldiers. "Never before," he said, "have inducements been greater for doctors to enter the service and never before has the need for them been more vital."

EXHIBIT AT KENTUCKY STATE MEETING

At the annual meeting of the Kentucky State Medical Association in Cincinnati September 27-30, the Army Institute of Pathology presented an exhibit of fifteen panels showing the over-all picture of the Medical Department of the Army and the Air Force. One panel, for example, comprised photomicrographs and descriptive material on the medical effects of atomic radiation. The Air Force panel showed rats that had been flown at an altitude of 8 miles at a speed of 500 miles an hour in order to study the effects of ultrasonic vibration on living organisms.

NAVY

A SYMPOSIUM ON ATOMIC WARFARE

Under the auspices of the Commandant of the First Naval District, a symposium on medical aspects of atomic warfare is held at Harvard Medical School October 15 under the chairmanship of Dr. Shields Warren, Captain, USNR. Among the speakers were Rear Admiral Morton L. Deyo, Commandant First Naval District; Rear Admiral Arthur H. Dearing, Assistant Chief, Bureau of Medicine and Surgery; Dr. Arthur K. Solomon of Harvard Medical School, who discussed "An Introduction to the Field of Nuclear Physics"; Dr. Bernard S. Gould of Massachusetts Institute of Technology, who discussed "Cytotoxicity in Relation to Wound Healing"; Captain John H. L. Heintzelman, USN, "Treatment of Radiation Casualties"; Dr. William Meissner of Harvard Medical School, "Radioactive Isotopes"; Dr. Robley Evans of Massachusetts Institute of Technology, "Effect of Radiation on Genetics"; Dr. Egon Lorenz, National Cancer Institute, "Significance of Small Doses of Radiation on Life Span and Carcinogenesis," and Dr. Shields Warren, "Effects of Radiation."

TOUR OF INSPECTION

Rear Admiral Clifford A. Swanson, the Surgeon General, returned on September 27 from an extended tour of inspection of military installations in Hawaii, Guam, Japan, the Aleutians, Alaska, Seattle and Denver. Admiral Swanson accompanied the Committee on Medical and Hospital Services of the Armed Forces on this tour, together with Rear Admiral Joel T. Boone, executive secretary to the committee, Rear Admiral Paul M. Albright and Lieutenant Commander A. H. Nelson, Administrative Assistant to the Surgeon General.

PERSONALS

Capt. Harry S. Harding, retired, now of Tualatin, Ore., has requested recall to active duty and has been nominated for duty at the Naval Torpedo Station, Keyport, Wash.

Dr. Luman H. Tenney, Princeton, N. J., has been appointed medical officer in command of "Volunteer Medical Division No. 4-23, United States Naval Reserve."

Captain Francis E. Tierney of Stockbridge, Mass., has voluntarily requested recall to active duty and has been nominated to the Board to Review Discharges and Dismissals at the Navy Department, Washington, D. C.

Rear Admiral Carlton L. Andrus, who recently returned from Guam, where he was in command of the Naval Medical Center, has been assigned as district medical officer of the Third Naval District.

The following reserve medical officers have voluntarily requested active duty: Captain Clement C. Troensgaard of Berkeley, Calif.; Commander Mervyn Shoor of Oakland, Calif., and Lieutenant Commander Charles W. Morrison of Lancaster, S. C.

AWARDS AND COMMENDATIONS

Captain Joseph Logue

The Presidential Unit Citation was awarded to Capt. Joseph B. Logue, MC, now of Arlington, Va., for service with the First Marine Division, Reinforced, during the period September 15-29, 1944, in action against the Japanese forces at Peleliu and Ngesebus in the Pacific Ocean area. Captain Logue was graduated from the University of Georgia School of Medicine, and entered the service in 1917.

VETERANS ADMINISTRATION

MALARIA AMONG VETERANS

The Veterans Administration announced September 15 that thousands of veterans who contracted malaria during World War II have been cured and that the problem of relapse from war-acquired malaria will be an insignificant one. The Veterans Administration records show that about 503,000 veterans were receiving compensation for malaria during June 1947; nine months later this number had dropped to 32,000, and it is still declining together with the number of relapses. While the malaria parasite eventually "burns itself out" in human bodies in one to three years (some persons are known to have remained infected for as long as twenty years), good results have been obtained from the use of the drugs chloroquine, pamaquine and the recently synthesized 8-aminoquinolines.

THE MEDICAL STAFF

The Veterans Administration announces that its medical staff now includes nearly 15,000 full time physicians, dentists and nurses, nearly 2,000 residents, 2,000 part time physicians, 475 consultants and 310 attending physicians. In addition,

thousands of civilian doctors working on a fee basis are available to eligible veterans in almost every community of the nation. With this medical care goes free prescription service for drugs and social service home visits when necessary and authorized.

HOSPITAL NEWS

Ground has been broken for the new 200 bed veterans hospital at Phoenix, Ariz., to cost more than \$4,000,000. Ground has been broken for the veterans hospital at Saginaw, Mich., which is expected to cost about \$4,500,000.

The Veterans Administration has approved the acquisition of 200 acres of Fort Funston, Calif., for a new 1,000 bed neuro-psychiatric hospital. No funds will be involved in the transfer of this tract, as it was recently declared excess to the Army's needs. This property is bounded on the south by the city limits of San Francisco and on the west by the Pacific Ocean.

An addition has been planned to the Wichita hospital's administration building. The regional offices of the Veterans Administration in this area are at present occupying space in an aircraft plant but must vacate next spring.

PUBLIC HEALTH SERVICE

APPOINTMENT OF SCIENTISTS IN THE REGULAR CORPS

An examination for appointment in the regular corps of the U. S. Public Health Service in the grades of Assistant Scientist and Senior Assistant Scientist will be held in the near future.

The Regular Corps of the Public Health Service is a commissioned officer corps composed of members of various medical and scientific professions. An appointment in the Regular Corps provides an opportunity for a qualified scientist to pursue his profession as a life career in association with others having similar training and interests. Possible assignments include research in the National Institute of Health, Bethesda, Md., and research or operational work in such Public Health Service installations as the Water and Sanitary Investigation Station, Cincinnati, the Communicable Disease Center, Atlanta, Ga., and the various Marine Hospitals.

Applicants for the assistant grade must (1) be citizens of the United States and at least 21 years of age, (2) possess earned doctor's degrees in a natural or social science from a university of recognized standing and (3) have had at least seven years of educational and professional training and experience, exclusive of high school. It is permissible for one to be admitted to the examinations within the nine month period

prior to the anticipated fulfillment of stated requirements. Applicants for the senior assistant grade must meet requirements for the assistant grade and must have had at least ten years of educational and professional training and experience, exclusive of high school.

Examinations will be given in the following subjects: aquatic biology, bacteriology, biochemistry, chemistry, entomology, mycology, parasitology, physics, physiology, psychology and protozoology.

Entrance pay (exclusive of benefits) for the assistant grade with dependents is \$3,811 per year and for the senior assistant grade with dependents \$4,351 per year.

Each qualified applicant will be given a physical examination by a medical officer of the Public Health Service. He will also receive written examinations and will appear before a board of commissioned officers for an interview. Written examinations in each field will be of a degree of difficulty comparable with that of examinations generally given to candidates for the Doctor of Philosophy degrees in the universities.

Application forms and additional information may be obtained from the Public Health Service Hospitals and district offices or by writing to the Surgeon General, United States Public Health Service, Washington 25, D. C.

MISCELLANEOUS

WARNING—PROCAINE SOLUTION

The Federal Food and Drug Administration warns physicians and dentists that certain codes of procaine hydrochloride solution manufactured by C. B. Kendall Company, Indianapolis, cause severe necrotic damage on injection. A batch of the solution coded 24830 was placed in distribution in February 1948. The Kendall Company determined, following reports of untoward reactions, that the solution is highly acid, possessing a pH of about 1. The company attempted to recall the lot, but the recall program has not been completely effective.

The Food and Drug Administration has learned that another batch of the firm's procaine hydrochloride solution coded 64712 has caused several alleged necrotic reactions. The pH of a vial of this lot was found to be 2.9. Pharmacologic work being performed by the Administration indicates that these two products are dangerous and should not be used. They have been distributed in the area from Florida to Wisconsin and from West Virginia to Texas. C. B. Kendall Company has distributed several other lots of injection drugs which possess

a pH of 3.0 or less. Of these, the firm has voluntarily recalled the following products on which complaints have been received: vitamin B complex, stronger, lot 54843; vitamin B complex, lot 44832; pentabexin, lots 44823 and 54837, and thiadoxin, lots 34808, 44817 and 64842.

Also, the following injection products of C. B. Kendall Company have shown low pH values as indicated:

Product	Lot. No.	pH Value
Vitamin B complex stronger.....	64844	2.9
Vitamin B complex.....	54811	2.8
Thiamine hydrochloride	34817	2.6
Thiamine hydrochloride	74806	2.9
Pyridoxine hydrochloride	74725	2.7
Pentabexin	64812	3.0
Procaine hydrochloride	74871	3.0

The Council on Pharmacy and Chemistry of the American Medical Association first called the Administration's attention to reports from physicians of injurious effects following use of the procaine solution.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CALIFORNIA

Narcotic Violation.—Dr. Frances Evelyn McNealy, 116 Temple Street, Los Angeles, pleaded guilty at Los Angeles to issuing fraudulent narcotic prescriptions contrary to state law and on July 20 was sentenced to 100 days in the county jail or a fine of \$350.

Imposter Turns Business Over to Chiropractors.—John R. Osborne, 56, pleaded guilty in Los Angeles to practicing medicine without a license, September 9, and was fined \$200. According to newspaper reports, he was operating a health emporium in Los Angeles, specializing in washing out the colon. Police said that his profits were as high as \$1,500 a day. In his probation report Osborne said that he had turned his business over to licensed chiropractors. In 1925 he had been sentenced to ten years in Federal prison and fined \$12,000 for using the mails to defraud in the promotion of Valhalla Burial Park in Burbank.

University Establishes Cancer Institute.—The University of California Medical Center in San Francisco has established a Cancer Research Institute. Dr. Robert S. Stone, professor of radiology, has been appointed acting director with Dr. Ralph L. Byron Jr., instructor in surgery and oncology, as assistant director. A full time director will be appointed later. Eventually the institute will be housed in specially designed quarters at the university's new medical center on the San Francisco campus. The state legislature appropriated funds for the new hospital and medical school buildings, and the U. S. Public Health Service has pledged \$1,000,000 for the additions needed to house the institute.

COLORADO

Personal.—Dr. Ruth B. Thomas Howard, formerly with the U. S. Public Health Service, has been appointed to the maternal and child health division of the state health department. Dr. Howard is a graduate of Columbia University College of Physicians and Surgeons, New York, and has practiced medicine in Maine and New Jersey.

State Medical Election.—At the annual meeting of the Colorado State Medical Association September 22-25 Dr. Casper F. Hegner of Denver was installed as president and Dr. Fred A. Humphrey of Fort Collins was made president-elect. Dr. George R. Buck, Denver, was elected constitutional secretary for a three year term. Dr. William H. Halley of Denver was reelected as senior delegate to the American Medical Association, with Dr. Kenneth C. Sawyer, of Denver, as alternate. The 1949 session will be held in Denver September 21-24.

DISTRICT OF COLUMBIA

Good Neighbor Gift to University.—Three physicians of Puerto Rico who received their medical education at the George Washington University School of Medicine have made a "good neighbor" gift of \$1,000 to the university in behalf of the 38 physicians now practicing in the Territory who are graduates of the school. Physicians pointed out that the gift was made in appreciation and because of the "tragic need for doctors" in Puerto Rico. They stated that only about half of the 100 government medical scholarships are filled because of overcrowding in the United States medical schools, and that government-built hospitals of Puerto Rico are unable to operate at full capacity because of the shortage of doctors.

ILLINOIS

Postgraduate Conference in Monmouth.—The third postgraduate conference planned by the postgraduate education committee of the Illinois State Medical Society will be held at the Elks Club, Monmouth, October 28, following a luncheon. The following Chicago speakers will participate:

Henry Poncher, Pediatric Therapeutics.
Arkell M. Vaughn, Vagus Nerve Resection in Treatment of Peptic Ulcer.
Theodore R. Van Dellen, Rheumatic Heart Disease.
Eugene A. Hamilton, Fractures.
Percy E. Hopkins, Acute Abdominal Emergencies.

A round table discussion will conclude the afternoon's program. Dr. Hopkins will speak at the dinner on "Prepayment Medical and Surgical Care" and Dr. Harry M. Hedge on "Birthmarks."

Teachers for Prospective Parents.—The Illinois Department of Public Health is sponsoring two in-service training courses in the administration, organization and teaching of classes for prospective parents. Scheduled for October 18 and 19 at the LaSalle Hotel in Chicago and for October 21 and 22 at the St. Nicholas Hotel in Springfield, these courses are open to physicians, nurses, nutritionists, school administrators and community leaders in health and welfare organizations. Authorities in the field of parent education will participate in the sessions. Emphasis will be placed on care for pregnant mothers and the value of guidance to parents in the care of small children.

Chicago

Grant to Epilepsy Clinic.—The Junior League of Chicago, Inc., has presented a \$13,000 grant to the University of Illinois College of Medicine toward the support of the Consultation Clinic for Epilepsy. The clinic, which is operated by the University's department of psychiatry at the Illinois Neuropsychiatric Institute, is under the direction of Dr. Frederic A. Gibbs.

Chemistry and Biologic Problems.—A series of eight lectures on "Applications of Organic Chemistry to Biologic Problems" are being given by Alexander R. Todd, Ph.D., visiting professor of biochemistry at the University of Chicago, in room P117 of Albert Merritt Billings Hospital of the University of Chicago, for eight consecutive Fridays, beginning October 8. Dr. Todd is professor of organic chemistry at Cambridge University, Cambridge, England.

Funds to Expand Mental Hygiene Clinics.—The Advisory Committee to the Mental Hygiene Section of the Chicago Department of Health recently approved the allocation of \$24,175 in federal funds to expand psychiatric and mental hygiene clinics in Chicago. Clinics at Mercy, Provident, Presbyterian, and Women and Children's hospitals will receive allocations to be used primarily for demonstration purposes. The money is being made available to extend existing psychiatric and mental hygiene services. Funds are provided through the National Mental Hygiene Act for the development of local mental hygiene programs.

Recommendations of Health Survey Committee.—The Committee on the Chicago-Cook County Health Survey will seek to expand the health protective activities of the Chicago-Cook County Health Department in 1949 by the addition of 50 public health nurses, 25 sanitary inspectors, 12 dentists and 3 dental hygienists to the Chicago Health Department. The committee has also recommended the development of the division of nutrition, health education, mental hygiene, geriatrics and adult hygiene and public health statistics, as well as a beginning of the district health center system. The committee pointed out that the Chicago Health Department should have in 1949 about 175 additional personnel, professional and clerical, and a total of \$600,000 additional in 1949 to cover their salaries, equipment and expenses and to provide for pay adjustments. Regarding the Cook County Department of Public Health, the committee has suggested that recommendations made be divided over four years. Recommendations are being made for about 40 additional personnel, professional and clerical, in 1949; joint operation with the city of the vital statistics program to save funds and improve efficiency; strengthening of the housing programs, especially in the improvement of inspection services; a more aggressive rodent control program, and improved garbage collection and disposal. The committee, which is sponsored by the Health Department and by the Council of Social Agencies in Chicago, was formed to work toward the adoption of the many recommendations of the Health Survey made last year by the U. S. Public Health Service for the improvement of health facilities of the metropolitan areas.

MASSACHUSETTS

Clinic Fellowship Available.—The Boston Dispensary has available a fellowship in medicine for clinic and domiciliary service. Additional appointments will be made July 1, 1949. Fellowships are approved by the American Board of Internal Medicine in satisfaction of graduate training. The salary is \$1,800 per year without maintenance or \$1,200 with maintenance. Automobile required. Address Frank E. Wing, Director.

Boston University Centennial.—The Boston University School of Medicine is celebrating its centennial anniversary October 22 and 23 in the Charles Hayden Memorial Building. A Colloquium of Medical Sciences began Friday afternoon. Out of state speakers included:

Dr. Carl F. Cori, St. Louis, Some New Aspects of the Action of Insulin.
Dr. Andrew C. Ivy, Chicago, Enterogastromy.
Dr. Helen B. Taussig, Baltimore, Md., Methods of Diagnosis of Congenital Malformations of the Heart.
Dr. George W. Corner, Washington, D. C., Benjamin Rush and His System of Medicine.

MICHIGAN

Foster Foundation Awards.—The Foster Foundation Committee on Medical Prizes, Grand Rapids, announces the winners in the contest for medical papers published in recognized state and national medical journals prior to Jan. 1, 1948. Papers were judged by a committee made up of members of the University of Michigan faculty. The winners, all Grand Rapids physicians, were: (1) Robert M. Eaton, "Pulmonary Edema," \$250; (2) William H. Veenboer and Henry P. Kooistra, "Vaginal Hysterectomy with Radical Advancement of the Uterosacral Ligaments for Pelvic Floor Hernioplasty in Cases Showing Third Degree Uterine Prolapse," \$100; Aymer M. Hill and Jerome E. Webber, "Serum Phosphatase Values in Children Showing Retardation in Osseous Development and Low Metabolic Rates," \$100; John T. Hodgson and Charles H. Frantz, "Arrest of Growth of Epiphyses," \$50.

Charles Herrick Celebrates 80th Birthday.—The eightieth birthday of Charles J. Herrick, Sc.D., was celebrated at the Kent Country Club, Grand Rapids, October 9. Among those in attendance were: Basil Harvey, M.B., emeritus dean of medical students, University of Chicago; George Bartelmez, Ph.D., professor of anatomy, University of Chicago; Davenport Hooker, Sc.D., editor, *Journal of Comparative Neurology*, University of Pittsburgh; Elizabeth C. Crosby, Ph.D., professor of anatomy, University of Michigan, Ann Arbor; Reuben Strong, Ph.D., emeritus professor of anatomy, Loyola University, Chicago; Drs. Paul C. Bucy and Gerhardt von Bonin of the University of Illinois, Chicago, and Dr. Normand L. Hoerr of Western Reserve Medical School, Cleveland. Dr. Herrick is emeritus professor of anatomy of the University of Chicago and for fifty-four years was on the editorial board of the *Journal of Comparative Neurology*.

MISSOURI

Visiting Professor.—Dr. Warren Andrew, professor of anatomy at George Washington University School of Medicine, Washington, D. C., has been appointed the visiting professor of anatomy at Washington University School of Medicine in St. Louis for a six month period beginning September 1. Dr. Andrew is substituting for Mildred Trotter, Ph.D., who is on a year's leave of absence.

Physical Medicine Award.—Dr. Frank H. Ewerhardt, St. Louis, received the Golden Key Award of the American Congress of Physical Medicine at a meeting in Washington, D. C., September 9, "in recognition of long and distinguished contributions" to physical medicine. Dr. Ewerhardt is assistant professor of physical therapeutics at Washington University School of Medicine, St. Louis.

NEW HAMPSHIRE

Society News.—The New Hampshire Pediatric Society has chosen Dr. Thomas B. Walker, Portsmouth, as president and Dr. Ursula G. Sanders, Concord, secretary-treasurer.

No Typhoid in Manchester.—According to the health officer of Manchester no death from typhoid occurred in that city from 1935 to date, and no case of typhoid occurred from 1936 through 1945. One case developed in 1946 in a man who ate raw clams from a polluted area.

NEW JERSEY

Personals.—Dr. Richard E. Shope, Kingston, member of the Rockefeller Institute for Medical Research, has been appointed associate director of the Merck Institute for Therapeutic Research. Dr. Shope is the recipient of the Alvarenga Prize and the John Phillips Memorial Award in 1937 and the John Scott Award in 1943.—Dr. Delma W. Caldwell, formerly an associate in medicine at Northwestern University Medical School, Chicago, has been appointed medical director of Standard Oil Development Company, research affiliate of the Standard Oil Company. Dr. Caldwell is a graduate of Rush Medical College, Chicago, 1941.

NEW YORK

Postgraduate Lectures.—The Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged a postgraduate lecture for the Tompkins County Medical Society at the Hermann M. Biggs Memorial Hospital, Ithaca, November 15 at 8:30 p. m. Dr. George N. Edson, New York, will speak on "Medicolegal Aspects of Trauma." On December 14, Dr. Paul A. Bunn, Syracuse, will address the Clinton County Medical Society, at the Champlain Valley Hospital Nurses' Home, Plattsburg, at 8:15 p. m., on "Problems in Physical Diagnosis."

Grants Support Rheumatic Fever Research.—The New York State Masons gave a \$200,000 grant September 21 to seven colleges and universities for research in rheumatic fever as the initial gift in their long range program. The institutions receiving the grants from the Masonic Fund for Medical Research and Human Welfare were Columbia University College of Physicians and Surgeons, New York; New York University-Bellevue Medical Center; Cornell University Medical School and Arthritis Clinic at New York Hospital, New York; Irvington House, Inc., Syracuse University Medical School, Syracuse; University of Buffalo School of Medicine and University of Rochester School of Medicine. Additional grants will be made January 1.

New York City

Women's Medical Association.—At the fall meeting of the Women's Medical Association of New York City, October 27, at the Beekman Tower Hotel, Dr. Martha M. Eliot, associate chief, Children's Bureau, Washington, D. C., will speak on "The World Health Organization."

Expand Medical Center's Teaching Program.—The New York University-Bellevue Medical Center announces that its teaching program for practicing physicians will be expanded to include ten hospitals instead of the seven included during the past year. The program is designed to bring to suburban and rural nonteaching hospitals the advantages of a working relationship with the University Medical Center (THE JOURNAL, Aug. 30, 1947, p. 1559). Additional hospitals from the New York area will probably be affiliated with the Medical Center during the academic year. Hospitals participating last year will again have affiliation. Since the plan was inaugurated a year ago, requests have been received from more than fifty hospitals. The plan is financed by the W. K. Kellogg Foundation.

Delafield Cancer Hospital.—The cornerstone of the six story Francis Delafield Hospital for cancer at 163rd Street and Fort Washington Avenue, Manhattan, was laid September 21. Mayor O'Dwyer was the principal speaker, with brief addresses by Charles P. Cooper, President of Presbyterian Hospital; Dr. Willard C. Rappleye, Dean of the College of Physicians and Surgeons, and Commissioner Frederick H. Zurmühlen of the Department of Public Works. This new city hospital is expected to be completed in August 1949, at a cost of \$6,200,000, with additional expenditure of \$800,000 for equipment and furnishings. It will memorialize Francis Delafield, distinguished New York pathologist and physician (1841-1915), who worked at Bellevue Hospital and Columbia University. The Francis Delafield Hospital is the second cancer hospital being constructed by the city. With the 300 bed James Ewing Memorial Hospital, begun last year, overcrowding will be relieved in the City Cancer Institute on Welfare Island and the Brooklyn Cancer Institute. The agreement among the city, Columbia University and Presbyterian Hospital, is that the purpose of the new hospital will be "to provide care and treatment of inpatients and outpatients with cancer or other neoplastic disease and to establish research into the causes, prevention and methods of diagnosis and treatment of cancer as well as to provide for the education of physicians, medical students, dentists and others in various aspects of cancer."

PENNSYLVANIA

Society News.—At the meeting of the Reading Eye, Ear, Nose and Throat Society September 15, Dr. Lewis K. Elfman, Philadelphia, chief in otolaryngology, Philadelphia General Hospital, spoke on "Lingual Tonsils."

Philadelphia

Personals.—Dr. Gilbert M. Bayne, a graduate of the University of Pennsylvania School of Medicine, 1947, has been appointed as assistant medical director of Sharp & Dohme, Inc.—Dr. Wilbur H. Strickland was appointed medical director of the Mercy-Douglas Hospital.

Allergy Meeting.—The annual scientific meeting of the Philadelphia Allergy Society will be held at the Philadelphia College of Physicians October 27 at 8:30 p. m. Dr. Jean Crump will speak on "Use of Amino Acids in Eczema in Children," Dr. Howard C. Leopold on "Effect of Benadryl on the Hematopoietic System" and Drs. I. George Blumstein and Jay Spiegelman on "The Philadelphia Program for Ragweed Extermination."

Hospital University Agreement.—Agreement in principle has been reached on the ultimate combination of the clinical facilities of the Department for the Sick and Injured of the Pennsylvania Hospital and the teaching hospital of the Graduate School of Medicine of the University of Pennsylvania.

sylvania. Such a program would contemplate the erection of a central service building at the Pennsylvania Hospital, Eighth and Spruce streets, the ultimate vacating of the Graduate Hospital buildings, the consolidation of the staffs and the establishment at the Pennsylvania Hospital of the major teaching service for the Graduate School of Medicine.

TEXAS

Course on Tumors.—A Tumor Postgraduate Course is being offered at the University of Texas School of Medicine, Galveston, October 25-28. Subjects to be discussed include neoplasms of the lymphoid system; tumors of the thyroid and esophagus; mediastinal tumors and cysts, and tumors of the trachea, bronchi and lungs. Guest speakers will be Drs. William E. Adams, Chicago; John V. Goode, Dallas, Texas; Harry Hauser, Cleveland; Clyde A. Stevenson, Temple, Texas; Arthur P. Stout, New York; Shields Warren, Boston, and Don C. Weir, St. Louis.

Grants for Research.—Among the grants received by the University of Texas Medical Branch, Galveston, are \$9,400 from the National Foundation for Infantile Paralysis, Inc., to assist studies on polio virus, under the direction of Morris Pollard, M.S., director of the Virus Laboratory. The Office of Naval Research has granted \$10,000 for a two year period for the support of the research on the tropical rat mite in relation to its role as vector of filariae, under the direction of J. Allen Scott, Sc.D., professor of epidemiology. The Upjohn Company of Kalamazoo, Mich., has made a grant of \$3,000 to the university to support research on antibiotics under the direction of Dr. Edgar J. Poth, professor of surgery and director of the Surgery Research Laboratory, and Lederle Laboratories of Pearl River, N. Y., has renewed a grant of \$2,500 to the University to support studies on rickettsial diseases.

WISCONSIN

Personal.—Dr. Ira F. Thompson, Beloit, was elected president of the state board of health at its July-August meeting. He succeeds Dr. Gunnar Gundersen, La Crosse, who was recently elected to the Board of Trustees of the American Medical Association.

County Societies Requested to Establish Emergency Service.—All county medical societies have been asked by the State Medical Society of Wisconsin to take "immediate steps to assure the public that it will be able to secure medical attention at night or in emergencies." The Council of the society has requested that all county societies, groups of physicians, or physicians and hospitals having any arrangement for night or emergency service already in operation take steps to explain their existence and operation to the public through the newspapers and radio stations.

Hearing Tests of School Children.—The Committee on Hearing Defects of the State Medical Society reports that it has tested 7,126 school children in several demonstration areas and found that 8 per cent had a hearing loss. Of this number 106, or 1.5 per cent, were selected to be given examinations at clinics sponsored by the local county medical society. Of these, 80 were sent to their family physicians for follow-up and treatment, and 21 others were advised to obtain hearing aids. In the past year efforts have been concentrated in a half dozen counties, with plans to expand the program later to the rest of the state.

ALASKA

Public Health Appointment.—Dr. Duncan M. Chalmers, Hale Center, Texas, has been appointed director, Division of Tuberculosis Control, Alaska Department of Health, succeeding Dr. Leo J. Gehrig, now of Boston. Dr. Chalmers was graduated from Boston University School of Medicine in 1934. He has been chief of the outpatient department and station allergist with the Veterans Administration at Batavia, N. Y., and county health officer and school physician in the Fairport District, N. Y.

CANAL ZONE

Organize Gynecology and Obstetrics Society.—The Sociedad Panameña de Ginecología y Obstetricia (Panamanian Society of Gynecology and Obstetrics) has recently been organized with Dr. G. García de Paredes as president and Dr. Julio A. Lavergne as secretary. The society hopes to promote the highest possible level of efficiency in the practice of the specialty and to collaborate with similar societies of other countries for an exchange of scientific information, statistical data and other activities.

GENERAL

Society Election.—At the recent meeting of the American Hospital Association in Atlantic City, John N. Hatfield, administrator of Pennsylvania Hospital, Philadelphia, was chosen president-elect, and Joseph G. Norby, Milwaukee, assumed the office of president. Dr. Arthur C. Bachmeyer, director of clinics, University of Chicago, was reelected treasurer.

Cerebral Palsy Film Production.—The National Association of American Business Clubs will raise \$25,000 for the production of an educational film on cerebral palsy. The film, which will be produced by the National Society for Crippled Children and Adults, will be available to interested persons and groups. The American Business Clubs adopted cerebral palsy as a national project in 1927. Lawrence J. Linck, Chicago, is executive director of the society.

Climatological Association Meeting.—The American Clinical and Climatological Association will hold its annual meeting at the Homestead, Hot Springs, Va., November 8-10, under the presidency of Dr. Francis M. Rackemann, Boston. Among the speakers will be Dr. Hans Selye, director of the Institute of Experimental Medicine and Surgery, University of Montreal, Canada, who will give the Gordon Wilson Lecture on "The General-Adaptation Syndrome."

Symposium on Feelings and Emotions.—The second International Symposium on Feelings and Emotions will be held October 28-30 by the Loyal Order of Moose with the cooperation of the University of Chicago. The sessions on October 28 will be held at Mooseheart, Ill., and the rest at the University of Chicago. The symposium is under the general chairmanship of Martin L. Reymert, Ph.D., director of the Mooseheart Laboratory for Child Research, Mooseheart, Ill., with Dr. Anton J. Carlson, professor emeritus of physiology, University of Chicago as honorary chairman.

Resolution on Animal Experimentation.—The Executive Committee of the American Association for the Advancement of Science, meeting in Washington, D. C., September 15, passed a resolution reaffirming its conviction that animal experimentation is essential for progress in the biologic and medical sciences. The association, regarding with apprehension the activity of certain groups which are attempting to prevent the use of unclaimed animals for study in qualified institutions of biologic medicine, believes that a supply of animals for research and teaching purposes should be assured, by legislation or ordinance where necessary, and not be left to the option of the local pound officials and private groups.

Chemical Society Awards.—The American Chemical Society has awarded Dilworth W. Woolley, Ph.D., an associate of the Rockefeller Institute for Medical Research, New York, the \$1,000 Eli Lilly & Company Award in biologic chemistry in recognition of his research on vitamins and antivitamins. Dr. Woolley received the Eli Lilly award in bacteriology in 1940, and the American Pharmaceutical Manufacturer Association conferred its first research award on him last April during the meeting in Havana. The \$1,000 Paul-Lewis Laboratories Award in enzyme chemistry was given to Albert L. Lehninger, Ph.D., assistant professor of biochemistry with the department of surgery at the University of Chicago for research in the chemistry and metabolism of fatty acids.

Heart Association to Expand.—The American Heart Association has formulated plans to expand community programs to combat heart diseases throughout the country and strengthen existing associations. Requests for the development of additional heart associations have been received from forty cities and states. According to Dr. Charles A. R. Connor, medical director, local affiliates are vitally needed to direct and coordinate a wide range of services in the prevention, care and treatment of heart disease including encouragement of proper hospital and follow-up care, development and improvement of cardiac clinics and coordination and extension of vocational training and employment programs for cardiac patients. A Research Allocations Committee is to be elected by the Scientific Council of the association to develop the continuing research program.

Impostor Poses as Representative of A. M. A.—An impostor representing himself as a field representative of the American Medical Association for the purpose of inspecting hospital laboratories has been operating in and around New York City. After completing his task he asks the hospital to cash small checks drawn on the First National Bank of Seattle, in which city he claims residence. Checks have been returned marked "unable to locate account." This man calls himself variously Dr. Rumerick, Dr. Haff or Dr. Alex O. Hoff. The New Jersey Hospital Association has described "Dr. Hoff" as "short, slightly built, height 5 feet 9 inches, weight 140 pounds, and of sallow complexion." He is reported as having a mus-

tache and brown hair parted in the middle and wearing glasses. Accredited representatives of the American Medical Association never call at a hospital to inspect without having had previous correspondence with the hospital. In case of doubt, contact The Council on Medical Education and Hospitals, American Medical Association, 535 N. Dearborn, Chicago.

Panamerican Medico-Social Congress.—The second Panamerican Medico-Social Congress will be held in Lima, Peru, December 3-10, under the auspices of the Peruvian government. Subjects to be discussed include: coordination of plans of public health and social assistance in all Latin-American countries, the social problem of cardiac patients, study of the participation of the medical profession in social security and social insurance, interchange professional practice of physicians, laws concerning the insane and coordination of plans for medical studies in Latin-American countries. Those planning to attend may obtain information from Gilberto Morey Sotomayor, Secretary, Second Panamerican Medico-Social Congress, Asociacion Medica Peruana Villalta 218, Apartado 926, Lima, Peru.

International Society of Hematology.—The first formal Congress of the International Society of Hematology was held in Buffalo, New York, August 23-26, with more than 700 persons representing 20 nations attending. This society is an outgrowth of the International Rh and Hematology Conference held in Dallas, Texas, and Mexico City in 1949. The next meeting will be held in 1950 in Cambridge, England. The officers elected for the next two years are: Sir Lionel Whitby, regius professor of physic, Cambridge University, Cambridge, England, president; Dr. Marcel Bessis, Laboratoire de Recherches, 53 Boulevard Diderot, Paris, France, secretary general (Europe); Sol Haberman, Ph.D., Baylor University Hospital, Dallas, Texas, secretary general (Western hemisphere), and Dr. Martin Hynes, department of medicine, Cambridge University, Cambridge, England, secretary-treasurer of the congress.

Incidence of Poliomyelitis.—The U. S. Public Health Service reports a total of 1,527 cases of poliomyelitis for the week ended October 2, as compared with 1,608 the previous week and 1,840 for the next earlier week (the highest weekly figure this year). This week's figure brings the total to date to 19,179, as compared with 7,290 in 1947 and 18,502 in 1946 for the corresponding period. The principal current increases occurred in New York, Ohio and South Dakota. The largest numerical decreases occurred in Minnesota, New Jersey, Pennsylvania, Nebraska, Kansas, Texas and North Carolina. The incidence in California declined from 310 to 307. As both the cumulative total of reported cases to date and the current week's figure are above the corresponding figures for 1946, this year's total may be expected to equal, if not exceed, that for 1946 (25,196). The preliminary case fatality rate in both North Carolina and Los Angeles is about 4 per cent. Assuming no significant change in virulence, the fact that, in recent years, the death rate for poliomyelitis has not increased in comparable measure with the incidence rate would indicate the reporting of a larger proportion of cases of mild nonparalytic disease in recent years.

National Board of Medical Examiners.—At the annual meeting of the National Board of Medical Examiners the number of candidates taking the various parts of the examination was reported at a record high. The following new members were elected to the board: Dr. Russell L. Haden, Cleveland, who was nominated by the Council on Medical Education of the A. M. A.; Dr. Paul B. Magnuson, Washington, D. C., medical director of the Veterans Administration; Dr. Winfred Overholser, professor of psychiatry, George Washington University, Washington, D. C.; Dr. James V. Warren, professor of physiology, Emory University, Atlanta, Ga.; Dr. Hugh R. Leavell, assistant director of Harvard School of Public Health, Boston, and Dr. Eugene A. Gillis, Washington, D. C., who succeeded Dr. Warren Draper, Washington, D. C., as a second representative from the U. S. Public Health Service. The officers elected were Dr. Borden S. Veeder, St. Louis, president; Dr. J. Stewart Rodman, Philadelphia, medical secretary, and Mr. Everett S. Elwood, Philadelphia, executive secretary and treasurer. It was decided that the next annual meeting should be held at the time and place of the annual session of the A. M. A.

Academy of Pediatrics.—The annual meeting of the American Academy of Pediatrics will be held at Chalfonte-Haddon Hall, Atlantic City, N. J., November 20-23, under the presidency of Dr. John A. Toomey, Cleveland. Included in the many round table discussions is a discussion on present day attitudes toward breast feeding and among the panels one on rheumatic fever. In a symposium on congenital cardiac disease held Monday morning Stanley Gibson, Chicago, will discuss "Congenital Heart Disease from the Standpoint of the Pediatrician"; Helen B. Taussig, Baltimore, Md., "Differential Diagnosis of Mal-

formations Which Cause Persistent Cyanosis with Special Emphasis on Those Amenable to Surgery"; Richard J. Bing, Baltimore, Md., "Role of Catheterization of the Heart and Other Physiological Methods in the Diagnosis of Congenital Heart Diseases"; John D. Keith, Toronto, Canada, "Angiocardiography in Congenital Heart Disease," and Alfred Blalock, Baltimore, Md., and Willis J. Potts, Chicago, "Surgical Management of Congenital Cardiovascular Anomalies." A Latin American session will be held Saturday at 8 p.m. under the direction of Dr. Félix Hurtado, Habana, Cuba, at which the speakers will be Drs. Jesús Lozoya Solís, México, D.F.; Ernesto G. Cofiño, Guatemala, Guatemala; and J. G. Bengochea, Dr. Hurtado and Arturo J. Aballi, Habana.

The Lasker Awards.—Winners of the 1948 Lasker Awards of the American Public Health Association for outstanding contribution in the fields of medical research and public health administration were announced October 6 as follows: Selman S. Waksman, Ph.D., of Rutgers University, New Brunswick, N. J., and René J. Dubos, Ph.D., of the Rockefeller Institute for Medical Research, New York, jointly, for "studies of the antibiotic properties of soil micro-organisms," and in Dr. Waksman's case also for the discovery of streptomycin; Vincent du Vigneaud, Ph.D., Cornell University Medical College, New York, "for studies of transmethylation and contributions to the chemistry of biotin and penicillin."

For outstanding administrative achievement Lasker Awards will be presented to Dr. Martha M. Eliot, associate chief, U. S. Children's Bureau, Washington, D. C., "for organization and operation of the Emergency Maternity and Infant Care Program, and to Dr. Rolla E. Dyer, director, National Institute of Health, Bethesda, Md., "for organization and administration of the Research Grants Division of the National Institute of Health of the U. S. Public Health Service." The Lasker Group Award for this year will be presented to the Department of Medicine and Surgery, Veterans Administration, and especially Dr. Paul R. Hawley, its former chief medical director, and Dr. Paul B. Magnuson, chief medical director, "in recognition of the efficient program developed by them to provide modern medical care for the millions of veterans who helped in the defense of America during World War II." The awards consist of \$1,000 each, and a gold replica of the classical statue, The Winged Victory of Samothrace, used in this instance as a symbol of victory over death and disease, for individual winners, and a silver statuette for group award winners. A leather-bound citation, hand illuminated in the style of the Middle Ages, accompanies each award. Formal presentation will be made November 11 at the American Public Health Association's annual banquet in Boston.

CORRECTION

Amberlite.[®]—In the answer to the query in THE JOURNAL, Sept. 25, 1948, page 330, it is stated that the anion exchange resin is still limited to investigational use, whereas it has been available for about a year as resinat.[®] The term "amberlite IR IV" was used in the answer. The anion exchange resin used in resinat[®] is a polyamine formaldehyde resin, sometimes designated as "amberlite XE 58."

Marriages

RICHARD D. RIDER, Riverside, Ill., to Miss Constance Lila Beebe, in Montreal, Que., Canada, June 18.

CLAUDE GIBSON HOOTEN JR., Lynchburg, Va., to Miss Martha Anne Jackson of Dade City, Fla., June 20.

KENNETH L. COOLEY, Rochester, N. Y., to Mrs. June Stone McKillen at Canandaigua, N. Y., June 19.

JOHN VERNON HUMMEL, Charleston, Mo., to Miss Barbara Jo Walker of Memphis, Tenn., June 26.

GORDON C. G. THOMAS, Charlottesville, Va., to Miss Barbara MacDonald of Darien, Conn., June 12.

PARK WEED WILLIS III, Seattle, to Miss Christine Boone Weaver of Philadelphia, June 5.

MARTIN DE FOREST SMITH JR., New York, to Miss Patricia Green of Islip, N. Y., in June.

WILLIAM F. BINKLEY, Sidney, Ohio, to Miss Jacqueline P. Benfer of Columbus, in June.

JOHN L. MCCLANAHAN, New York, to Miss Rita S. Bullitt of Oxmoor, Pa., June 5.

ISAAC S. COE to Miss Sybil Tedford McGee, both of Clarksdale, Miss., June 26.

Deaths

Herschel Frank Connally ☉ Waco, Texas; born in McGregor, Texas, Jan. 6, 1878; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; served as chairman of the board of councillors, for many years councillor of the Twelfth District, past president and vice president of the State Medical Association of Texas; past president of the McLennan County Medical Society; in 1927 appointed to the state board of medical examiners, serving as chairman of the reciprocity committee for many years, and at the time of his death as secretary of the board; member of the board of directors of the Federation of State Medical Boards; fellow of the American College of Surgeons; during World War I was sent overseas as chief of surgical service of Base Hospital number 90, serving first as a major and then as lieutenant colonel; formerly city commissioner, mayor of Waco and member of the board of directors of the Chamber of Commerce; first chief of staff at the Hillcrest Memorial Hospital, where he was a member of the surgical staff; on the staff of the Providence Hospital; since 1931 consulting surgeon at the Veterans Administration Hospital; medical examiner of the Amicable Life Insurance Company and for many years local surgeon for the Missouri-Kansas-Texas Railroad; died July 16, aged 70, of coronary occlusion.

Anatole Kolodny ☉ New York; born in Kazan, Russia, Nov. 23, 1892; received Ph.D. degree from University of Basel, Switzerland, in 1912, and M.D. from the Imperial University of Kazan Faculty of Medicine, Russia, in 1917; formerly on the faculty of his alma mater and assistant in pathology at the Pathological Institute in Berlin; at one time on the faculties on the State University of Iowa College of Medicine in Iowa City and the University of Illinois College of Medicine in Chicago; resident in neurosurgery at Johns Hopkins Hospital in Baltimore in 1926 and 1927; member of the American Association of Pathologists and Bacteriologists, American Association for Surgery of Trauma and the American Association for Advancement of Science; fellow of the American College of Surgeons; during World War I served with a Russian battalion attached to the French Army and also on Turkish and Western fronts as a regimental physician; had been decorated with the Cross of St. George for bravery in the Imperial Russian Army in the field; served on the staffs of Beth-El Hospital and the Hospital for the Aged, Brooklyn; author of monographs dealing with pathology and surgery; died July 8, aged 55, of carcinoma of the esophagus.

Nelius Julian Nessa ☉ Sioux Falls, S. D.; born in Preble, Minn., Nov. 3, 1880; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; past president of the South Dakota State Medical Association and the Sioux Falls Seventh District Medical Society, specialist certified by the American Board of Radiology; member of the House of Delegates of the American Medical Association from 1943 to 1945; fellow of the American College of Radiology; member and since 1920 councillor of the Radiological Society of North America; member of the American Roentgen Ray Society; served as a first lieutenant in the medical corps during World War I; member of the Selective Service Board during World War II; past president of hospital staffs and senior radiologist to the McKennan and Sioux Valley hospitals; died in Rochester, Minn., July 2, aged 67, of acute leukemia.

Samuel McCullagh, New York; born in Philadelphia, Feb. 21, 1876; University of Pennsylvania Department of Medicine, Philadelphia, 1898; specialist certified by the American Board of Otolaryngology; member and formerly vice president of the American Laryngological Association; member of the American Laryngological, Rhinological and Otolological Society; fellow of the American College of Surgeons; established a medal and sufficient funds to endow it at the New York Academy of Medicine; received the Distinguished Service Cross for services in France during World War I; consulting laryngologist to the Manhattan Eye, Ear and Throat Hospital; died July 21, aged 72, of chronic cardiac valvular disease.

Frederick Whitney Davis, Chinchilla, Pa.; born on Feb. 24, 1874; Jefferson Medical College of Philadelphia, 1898; member of the American Medical Association; formerly secretary of the Lackawanna County Medical Society; received citations from the Serbian and Yugoslavian governments for his services against a typhus epidemic in the Balkan states after World War I, during which time he served overseas; at one time medical director of the Lackawanna County; served on the staffs of West Side Hospital, Moses Taylor Hospital and St. Joseph's Children's and Maternity Hospital; died July 31, aged 74, of heart disease.

Frank Joseph Anderson ☉ Minneapolis; University of Minnesota Medical School, Minneapolis, 1917; joined the regular U. S. Navy; served during World Wars I and II; on the staff of the Deaconess Hospital, where he died June 25, aged 58, of cerebral hemorrhage and hypertension.

Thomas Arneson, Almena, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1898; member of the American Medical Association; served during World War I; died June 29, aged 78, of epithelioma of the penis.

Paul Beauchamp, Science Hill, Ky.; Chattanooga (Tenn.) Medical College, 1896; died in June, aged 78, of heart failure.

James Wesley Benham, Columbus, Ind.; Louisville (Ky.) Medical College, 1896; member of the American Medical Association; served during World War I; died June 26, aged 79, of coronary occlusion.

Luthard N. Bergh ☉ Montevideo, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1906; on the staff of Montevideo Hospital; division surgeon for the Chicago, Milwaukee and St. Paul Railway; died June 2, aged 67, of coronary disease.

Frank Simons Bissell, Los Angeles; University of Minnesota College of Medicine and Surgery, Minneapolis, 1902; at one time on the faculty of his alma mater; served as vice president of the Radiological Society of North America; accidentally killed June 27, aged 69, while crossing a road in Glendale.

Edwin A. Blakeley, Sanford, Mich.; Saginaw (Mich.) Valley Medical College, 1903; died June 11, aged 78, of arteriosclerosis and cerebral hemorrhage.

John C. Blinn, Bellefontaine, Ohio; Homeopathic Hospital College, Cleveland, 1884; died in New Philadelphia June 14, aged 92, of myocardial infarction.

Warren Oscar Christenson, Wellsville, Utah; Rush Medical College, Chicago, 1915; member of the American Medical Association; served as vice president of the Utah State Medical Association; formerly mayor; secretary and past president of the Wellsville-Menton Conservation District; died June 20, aged 76, of heart disease.

Willard Olin Clark ☉ Lewiston, Idaho; Kansas Medical College, Medical Department of Washburn College, Topeka, 1912; fellow of the American College of Surgeons; past president of the Idaho State Medical Association; served during World War I; affiliated with St. Joseph's Hospital; died June 1, aged 62, of cerebral hemorrhage, hypertension and arteriosclerosis.

Ella Jane Collins, Linesville, Pa.; Cleveland Medical College, Homeopathic, 1895; died June 16, aged 91, of auricular fibrillation.

Knox Rose Freytag, Oakland, Calif.; Northwestern University Medical School, Chicago, 1946; entered the medical corps, Army of the United States, as a first lieutenant on Jan. 28, 1947; later promoted to captain; stationed at Letterman General Hospital in San Francisco; honorably discharged; died May 5, aged 27.

Philip Hallock, Beverly Hills, Calif.; University of Minnesota Medical School, Minneapolis, 1929; formerly on the faculty of his alma mater; member of the American Medical Association and Central Society for Clinical Research; fellow of the American College of Physicians; served during World War II; died in Los Angeles June 29, aged 45, of coronary occlusion.

James Jones Hudgins ☉ Paragould, Ark.; University of Arkansas School of Medicine, Little Rock, 1912; died June 12, aged 59, of melanoma-sarcoma of the right eye.

James Edgar Hunt, Inglewood, Calif.; Maryland Medical College, Baltimore, 1909; died June 20, aged 67, of acute pulmonary edema.

Richard Bush Hunter, Winchester, Ky.; Medical College of Ohio, Cincinnati, 1897; died in the Clark County Hospital, June 13, aged 74, of coronary heart disease.

Charles F. Judson, Wynnwood, Pa.; University of Pennsylvania Department of Medicine, 1893; formerly on the staffs of Lankenau and Children's hospitals in Philadelphia; died June 3, aged 79.

Robert James Lynch ☉ Des Moines; Northwestern University Medical School, Chicago, 1906; member of the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; on the staffs of the Iowa Lutheran, Iowa Methodist and Mercy hospitals; died May 28, aged 67, of coronary thrombosis.

John H. Lewis, Dawson, Ga.; Atlanta Medical College, 1893; member of the American Medical Association; died June 25, aged 84, of arthritis and uremia.

William Hill Lewis, Siloam, Ga.; Atlanta School of Medicine, 1908; member of the American Medical Association; died June 29, aged 65, of heart disease.

William Lipschitz, New York; Long Island College Hospital, Brooklyn, 1915; died June 17, aged 64.

John Clarence McGrath, Nelsonville, Ohio; Ohio Medical University, Columbus, 1898; died June 20, aged 78, of arteriosclerosis.

Aloysius Patrick Nachtwey † Dickinson, N. D.; Milwaukee Medical College, 1912; member of the House of Delegates of the American Medical Association from 1936 to 1947; past president and secretary of the Stark County Medical Society; died June 29, aged 59.

John Robert Owens, North Canton, Ohio; Western Pennsylvania Medical College, Pittsburgh, 1897; member of the American Medical Association and the Medical Society of the State of Pennsylvania; died June 6, aged 76.

Carl Wilhelm Paulson, Los Angeles; University of Minnesota Medical School, Minneapolis, 1916; died in the Veterans Administration Center, West Los Angeles, June 27, aged 63.

George Tompkins Pomeroy † Sonoma, Calif.; Oakland College of Medicine and Surgery, 1906; served overseas during World War I; formerly director of the Veterans Home Hospital in Veterans Home; died June 20, aged 71, of coronary occlusion.

Henry Buron Powell, Gadsden, Ala.; University of Alabama School of Medicine, 1910; member of the American Medical Association; physician for Republic Steel Corporation; served during World War I; died in Baptist Memorial Hospital, June 24, aged 64, of cerebral thrombosis.

Daniel Lewis Rectenwald, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1903; also a graduate in pharmacy; died in St. Joseph's Hospital July 8, aged 69, of pneumonia and thrombophlebitis of the common iliac veins.

Arthur Augustus Reeder, Portageville, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1901; member of the American Medical Association; for many years member of the board of education; died July 25, aged 73, of heart disease.

James S. Reynolds † Minneapolis; University of Minnesota College of Medicine and Surgery, Minneapolis, 1905; fellow of the American College of Surgeons; past president of the Minnesota Academy of Ophthalmology and Otolaryngology and the Hennepin County Medical Society; affiliated with St. Barnabas Hospital; was shot and killed July 8, aged 68.

Compton Riely † Baltimore; University of Maryland School of Medicine, Baltimore, 1897; clinical professor of orthopedic surgery at his alma mater; specialist certified by the American Board of Orthopaedic Surgery; member of the American Orthopaedic Association; affiliated with the Cambridge-Maryland Hospital, Cambridge, University Hospital and Franklin Square Hospital; attending surgeon on the staff of Kings Daughters Hospital in Martinsburg, W. Va., where he died June 27, aged 76, of lobar pneumonia and coronary thrombosis.

Percy Jay Ross, Chicago; State University of Iowa College of Medicine, Iowa City, 1926; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; specialist certified by the American Board of Otolaryngology; served as a lieutenant colonel in the medical corps, Army of the United States, during World War II; senior otolaryngorhinologist at St. Luke's Hospital; died at his home in La Grange, Ill., September 28, aged 46, of carcinoma.

Stephen Sampson Royster, Shelby, N. C.; Tennessee Medical College, Knoxville, 1891; chairman of the Cleveland County Board of Commissioners; for many years affiliated with Shelby Hospital; formerly served as a member of the city council and as president of the chamber of commerce; died July 13, aged 80, of angina pectoris.

Carl Gustaf S. Rydin, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; veteran of the Spanish-American War and World War I; died in Veterans Administration Hospital in Downey, Ill., July 30, aged 74, of pneumonia and arteriosclerosis.

Hiram Sibley Schumacher † Rochester, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1907; affiliated with the Genesee Hospital, where he died July 14, aged 69, of bronchogenic carcinoma.

Rollin Robb Shannon † Williamsport, Ind.; Stanford University School of Medicine, San Francisco, 1933; member of the

Utah State Medical Association; served during World War II; on the staff of the Community Hospital; was killed near Ross-ville, Ill., July 14, aged 44, in an automobile accident.

Bohumil Sladek, Cicero, Ill.; College of Physicians and Surgeons of Chicago, 1892; died July 24, aged 77, of cerebral hemorrhage.

Herbert Frederick Spierling † Chicago; Northwestern University Medical School, Chicago, 1925; member of the staff of the Jackson Park Hospital, where he died July 3, aged 53, of hypertension and chronic bilateral nephrosis.

David Ellicott Squiers, Scotts, Mich.; University of Michigan Medical School, Ann Arbor, 1903; died at Pickeral Lake, July 20, aged 69, of carcinoma of the stomach.

James Bodine Stalker, Indianapolis; University of Louisville (Ky.) Medical Department, 1898; member of the American Medical Association; served overseas during World War I; for many years physician for the Federal Court; on the staffs of the Methodist Hospital and St. Vincent's Hospital, where he died July 6, aged 72, of coronary occlusion.

Thomas Gordon Sutherland † Auburn, Wash.; George Washington University School of Medicine, Washington, D. C., 1927; affiliated with the Auburn General Hospital; director of the Bank of Auburn; died in the Virginia Mason Hospital, Seattle, July 4, aged 50, of cardiovascular renal disease.

Ollie Herbert Treadway, Pittsfield, Ill.; University of Missouri School of Medicine, Columbia, 1893; died in the Illini Community Hospital, July 14, aged 87, of coronary thrombosis.

William Carl Treder † Schenectady, N. Y.; Albany Medical College, 1907; past president and secretary of the Schenectady County Medical Society; formerly on the faculty of the Syracuse University College of Medicine; for many years city health commissioner; served as assistant pathologist and bacteriologist for Onondaga County, for many years health officer of Glenville, county coroner and school medical inspector for free school district number 2, town of Glenville; died July 20, aged 68.

George Loughlin Tully, Newton, Mass.; Harvard Medical School, Boston, 1916; served during World War I; died July 1, aged 58, of carcinoma.

William Chester Vernon † Okmulgee, Okla.; St. Louis University School of Medicine, 1916; served during World War I; medical examiner for Okmulgee county draft board during World War II; formerly affiliated with the Indian Service; part owner of the Ming-Vernon Hospital; affiliated with Okmulgee City Hospital; died July 17, aged 55, of melanop-epithelioma.

Samuel Charles Wagner, Elkhart, Ind.; Medical College of Indiana, Indianapolis, 1903; member of the American Medical Association; served during World War I; formerly county coroner; on the staff of the Elkhart General Hospital, where he died July 27, aged 73, of congestive heart failure.

James Knight Wardwell, Boston; Harvard Medical School, Boston, 1905; served on the staff of the Massachusetts Woman's Hospital; died July 29, aged 67, of heart disease.

Herbert Baker Whitney, Denver; Harvard Medical School, Boston, 1882; professor of medicine emeritus at the University of Colorado School of Medicine; member of the American Clinical and Climatological Association; past president of Colorado State Medical Society; died in St. Luke's Hospital, July 3, aged 91, of coronary thrombosis.

Alfred Wiener † New York; College of Physicians and Surgeons, medical department of Columbia College, New York, 1889; member of the American Academy of Ophthalmology and Otolaryngology; affiliated with the Montefiore and St. Luke's hospitals; died July 21, aged 81, of arteriosclerosis.

Sard Wiest, Portland, Ore.; Gross Medical College, Denver, 1892; member of the American Medical Association; died July 6, aged 80, of coronary thrombosis.

Francis Marion Wilks, Tulsa, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1910; died in a local hospital July 12, aged 75.

Rilie Edward Williams, Cuyahoga Falls, Ohio; Starling Medical College, Columbus, 1898; died July 9, aged 76, of coronary occlusion.

Alfred Herman Winkel † Stanwood, Wash.; Washington University School of Medicine, St. Louis, 1911; fellow of the American College of Surgeons; served on the staffs of King County, Swedish, Providence and Columbus hospitals in Seattle; died in Camano Island July 11, aged 61, of carcinoma of the prostate.

Benzion Wolf, Chicago; Bennett Medical College, Chicago, 1914; died August 14, aged 64, of carcinoma of the pancreas.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 18, 1948.

The Minister of Health and the National Health Service

Speaking at the annual dinner of the Society of Medical Officers of Health, Mr. Bevan, the Minister of Health, was very optimistic about his achievement. He regarded the present year as memorable "because it had witnessed the great Health Act." There was a section of the community more harassed than any other by the possibility of surgical and hospital bills—the middle and professional classes. He had feared that unwholesome propaganda might persuade them to stand outside the Act. That danger was past. The last figures indicated that between 92 and 93 per cent of the population had already signed up with their doctors. They were coming in now at the rate of 150,000 a week, and it appeared that by the end of the year practically 100 per cent of the population would be in. He was delighted. This meant that the health service would be a classless service and every section of the community would be in full enjoyment of its benefits.

There had been complaints from some quarters about the number of spectacles that had been supplied. The only misgiving he had was that now nearly everybody would be able to read some of the nonsense that had been written about the Act. It was to be expected that in the first year there would be a rush for some of the facilities, but that would settle down when the novelty wore off. He was delighted to see that the dentists were now coming in more quickly. In his self congratulation the Minister did not reply to any of the criticisms of the Act. Their validity will soon be put to the test. One question may now be asked. If 100 per cent of the population, or something near it, are coming under the Act, where is the private practice, which many doctors believed would be preserved? What about the freedom of the doctor to work under the Act or in private practice as he preferred? If the Minister is correct, private practice can continue on only a very limited scale.

Streptomycin Treatment of Tuberculosis

The Ministry of Health has issued an important statement on the streptomycin treatment of tuberculosis, so that all who are likely to use the drug should be aware of its limitations and dangers. Clearly streptomycin is not a panacea.

The production of streptomycin-resistant strains of *Mycobacterium tuberculosis* is the greatest potential danger. Thus a patient with very early pulmonary disease who might have responded to other recognized forms of treatment alone, but who is given streptomycin prematurely, may be found, in the event of relapse or extension of the disease, to be beyond the reach of streptomycin therapy. There is a risk of persons with old chronic cases spreading infection with streptomycin-resistant strains, so that patients acquiring meningeal or miliary tuberculosis from them cannot hope, in their turn, to be benefited by streptomycin. However, the value of the treatment is considered so great that beds in two categories, (a) tuberculous meningitis and acute miliary tuberculosis and (b) tracheobronchial tuberculosis, are being allotted in hospitals all over the country.

Do We Eat Too Much?

Prof. A. Fleisch, president of the Swiss Federal Commission for Nutrition, caused a stir in the physiologic section of the British Association for the Advancement of Science by stating that we are eating too much. He claimed that the United Nations' minimum standard of 2,400 calories a day is too much and that 2,160 is sufficient for all except heavy manual workers.

The calory level of the British diet is 2,800. He based his conclusions on a large scale experiment made with scientific thoroughness on 4,000,000 persons in Switzerland. This showed that the amount of calories, proteins and fats considered essential in civilized countries is utterly unnecessary. One gram of protein daily per kilogram of body weight is quite sufficient. The world is imbued with the idea that an agreeable taste goes hand in hand with nutritional value. But Fleisch's experiment disproves this. A large part of the meat and eggs eaten before the war and of the refined fats, sugar, white bread and macaroni could have been replaced by vegetables, fruit and darker bread. Today, when great nations are suffering from hunger it is absolute waste if large quantities of wheat are converted into eggs, with the loss of 90 per cent of the nutritive value. In Switzerland potatoes were added to flour and large quantities of skim milk were drunk. Eggs were rationed to one or two a month; the blood of slaughtered animals was used for sausages; fat was made from substances normally used for soap, and other fats were extracted from bones, tobacco seed and beech nuts. Linseed oil, instead of being used to paint houses, was eaten mostly in dehydrated form. It did not taste good but was easily digested. As a result there were no queues at the food shops. These are now normal all over Britain.

Artificial Insemination

A commission appointed by the Archbishop of Canterbury and consisting of clerics, physicians and lawyers has presented its report. All the members agreed that "assisted insemination," as a sequel to normal or attempted normal intercourse between husband and wife, may be justified. With one clerical member dissenting, the commission also found that, when assisted insemination is inapplicable or ineffective, other methods of using the husband's semen may be employed, even if there is no practical alternative to masturbation. All the members, except another cleric, agreed that artificial insemination with donated semen brings about a breach of the marriage; it violates the exclusive union between the husband and wife, defrauds the child begotten and deceives both his putative kinsmen and society at large. For donor and recipient the sexual act loses its personal character and becomes a mere transaction. For the child there must always be the risk of disclosure. With the same member dissenting, the commission judged the use of donor semen to be wrong in principle and contrary to Christian standards.

PARIS

(From Our Regular Correspondent)

Sept. 1, 1948.

Food Consumption in France from 1940 to 1947

It is only now that the results of the various investigations, started in 1940, are brought up to a definite point by the Nutrition Section of the National Institute for Hygiene. J. Tremolieres and G. Pequignot and his co-workers have conducted tests, under the form of enquiries in families and groups. All the food-stuffs consumed during one week were weighed according to a method recommended by Professor Bigwood; food composition charts developed by the combined working committee of the United States and the United Kingdom were used (and for Paris those of Madame Randoïn). From 1940 to 1945, four principal alimentary groups were noted: (1) Marseilles and the Mediterranean region, where the consumption of calories falls to 1,500, the proteins to 15; (2) Paris and Lyons: calories a little higher; proteins, 20 Gm.; (3) rich rural regions: calories, 3,000; proteins, 35 Gm.; (4) industrial cities of secondary importance: alimentation slightly richer than in Paris and Lyons. Differences in mortality corresponding to these groups are noted. In the Mediterranean area and for the period 1940 to 1944, the mortality rate was increased by 50 per cent in com-

parison with 1936 to 1938; in Paris and Lyons (Seine and Rhone) by 20 to 30 per cent (persons over 70, children under 4 and those from 10 to 19 are the most affected); in the rich rural regions the rate diminished by 10 to 20 per cent; the decrease is more accentuated in 1945. This decrease is conspicuous among persons aged 20 to 69 and especially with respect to deaths from tuberculosis. Since the third quarter of 1946 improvement in the food supply has occurred, but, as the improvement has been in foodstuffs not subjected to taxation, it results in a great inequality in the distribution, the coefficient of variation being 50 per cent for animal proteins and 36 per cent for lipids.

Nutritional Unbalances.—Madame Randoin, a member of the National Academy of Medicine, has just explained that unbalances are mostly due to deficiencies in animal proteins, animal and vegetable lipids, calcium, vitamin C (during the winter months) vitamins of the B₂ group, and especially nicotinic acid and vitamins A and D. The dairy products (milk, butter, rich cheeses) are those that have been most lacking the last eight years. Children over 4 years of age, adolescents and old persons receive milk only from time to time; other adults, with the exception of expectant and nursing mothers, never have any.

Growth Disorders.—In 1944 the maximum stunting of 14 year old girls in stature was 11 cm. and of 14 year old boys 7 cm. (the weight of the latter was 8.6 Kg. below normal). In 1945, Tremollieres and his co-workers made a survey of 40,000 children in nine urban centers; these children also were almost normal in height until they were 9 to 10 years old; the deficiency increased rapidly until the age of 14 years, when girls, on the average, were 7 cm. below normal in height and 5 Kg. in weight, and boys were 4 cm. and 6 Kg. below normal. Surveys of 150,000 children during the academic year 1946-1947 show a general improvement, the predominating departure from the normal occurring at the ages from 13 to 15. As a rule, subnormal weight is more noticeable in boys, subnormal stature in girls. There are great differences according to social classes. Among the poor, boys are 2 cm. and 3 Kg. below normal at the age of 13 to 14; while 14 to 15 year old girls are 2.5 to 4 cm. below normal. A delay in puberty has been found. As a matter of fact, it is the rapid growth before puberty that has been affected by underfeeding; less extreme disorders among girls than in boys show that the female organism is more adaptable.

Disorders in Thermogenesis.—Saidman, before the war, drew attention to the study of the average surface temperature, measured at thirty-three specified points on the cutaneous surface. Since 1941 he has found that, as the result of underfeeding, there is a fall of the surface temperature of the body, more noticeable than that of the internal one. The author and his co-workers tested 200 Parisian school children in this way during the winters of 1945-1946 and 1947-1948. They found that the lowering of temperature varies according to the body area; the average temperature has fallen by 3.8 degrees C. at the level of the knees and by 2.5 degrees C. in the area of the buttocks (an area where circulation is normally already reduced). The trunk is relatively spared; on the abdomen, the temperature decreased until 1945-1946 and rose thereafter; the temperature of the buttocks appeared to be stationary after a fall in 1945-1946. The lowering of the skin temperature is considered by the author a protective process that diminishes caloric loss and consequently the need for food.

Vitamins

P. Duquenois, in his capacity of expert for the control of proprietary medicines, has had to examine a large number of products containing various vitamins. He has found that the amount of vitamin (determined by Tillmans' method for vitamin C and by biologic methods in the rat for vitamin D) agreed

nine times out of ten with the formula in samples gathered immediately after production. On the contrary, the same proprietary medicines taken at the druggist's or after having stayed some months in the laboratory did not yield the same rate. The amount of vitamins C and D diminishes with the duration of the storage: three times out of ten it was half the one advertized; in 1 case it was not possible to detect the vitamin C. It is oxidation, little to be feared when the vitamin is in the crystallized state, that interferes with conservation, especially when the humidity rate attains 10 per cent.

Inquiry on Food and Nutrition

On the initiative of the Nutrition and Food Commission of the National Academy of Medicine, A. Mayer, at one of the last meetings, gave a report on the food crisis in France. A comparison between the metropolitan prewar production and that of 1946-1947 shows serious deficits in glucides, fats and milk:

	Average Production	
	1935-1940	1946-1947
Wheat.....	80,000,000 quintals	32,000,000 quintals
Potatoes.....	150,000,000 quintals	114,000,000 quintals
Beet sugar.....	9,000,000 quintals	7,000,000 quintals
Ment.....	2,000,000 tons	1,700,000 tons
Starchy vegetables.....	2,250,000 quintals	1,700,000 quintals
Eggs.....	450,000 tons	365,000 tons
Milk.....	146,000,000 hectoliters	92,000,000 hectoliters
Animal fat.....	350,000 tons	270,000 tons

The author emphasizes the important part played by physicians in a food crisis: He has to deal with the patients' diets, to protect the most susceptible groups (children, expectant and nursing mothers, adolescents, old persons, heavy workers) and to watch over the nutritional condition of various social groups. The physician ought to become one of the most important advisers of those in charge of national and world economy.

TURKEY

(From Our Regular Correspondent)

ANKARA, Sept. 14, 1948.

Q Fever Investigation in Turkey

Prof. R. Parker, Director of the United States Rocky Mountain Spotted Fever Laboratory, informed the Ministry of Health in Turkey that Q fever antigen had been obtained from goats imported from Turkey. In 1947 Prof. Dr. George Blanc of the Pasteur Institute of Casablanca came to Ankara to lecture on Q fever. Thereupon Dr. Said Golem of the Ankara Central Institute of Hygiene asked Dr. Parker for antigen. Prof. Blanc sent engorged ticks of Morocco stock. Inoculating guinea pigs and injecting the infected guinea pig serum into eggs, Dr. Muhtar Derman of the control service of the institute produced the second antigen series for the serologic tests. Dr. Niyazi Musa Erzin, director of the Ankara Institute, who studied at the Robert Koch Institute in Berlin, directed the investigation. Dr. Sabaheddin Payzin, chief of the serum control laboratory, collected serums from hospitals. Dr. Said Golem searched for antibodies in human and animal serums and isolated stocks.

The first patient was Dr. Ali Korur of the Ankara Model Hospital, who in February 1947 suffered from atypical pneumonia and was treated at the hospital. The disease began with malaise, slight fever and chills, increase of fever the next day and pain in the left upper part of the chest, the pain increasing with deeper breathing. Roentgenograms revealed a pneumonia focus at the upper lobe of the left lung; two days later a second focus had developed; three days later a third, and four days later the roentgen examination clearly indicated the disappearance of the foci. The roentgenogram made after the patient

had been free from fever for several days again showed lesions. The leukocyte count on the fourth day of the disease was 9,600, on the seventh 8,300 and on the eighth day 8,000.

Every third day mice were inoculated with sputum. There were no deaths among the mice, but the sputum had revealed no pneumococcus. On the eleventh day the fever gradually came to normal. Sulfonamide and penicillin treatment had not been effective; a complement fixation test made one year later revealed a serum titer of 1/80, with a reaction of 2 plus and heated serum agglutination a titer of 1/4. This serum was sent to the United States Rocky Mountain Spotted Fever Laboratory, where the titer was found to be 1/128.

The second patient was Dr. Mahmud Sabit Akalin, formerly director of the Central Institute of Hygiene, who was treated at his home. The third was a boy aged 17 with the usual symptoms of pneumonia; radiology revealed lesions at the base of the left lung. The leukocyte count was 7,400. On the fifth day a guinea pig was inoculated with blood from the patient, but there was no rise in temperature. A complement fixation test of the patient's serum elicited a negative reaction on the fourth day, but on the eighteenth day gave a positive reaction at a titer of 1/15.

The serum of 60 animals was also tested. In 4 guinea pigs during convalescence from Q fever, the complement fixation reaction at a titer of 1/10 and 1/20 was clearly positive and in 1 guinea pig positive at a titer of 1/80; in 3 guinea pigs strongly positive at a titer of 1/40. Rickettsia agglutination was clearly positive at titers of 1/4 and 1/8. In 11 Angora goats only three complement fixation tests elicited positive reactions at titers of 1/10 and 1/20; all other tests elicited negative reactions. In 12 Angora sheep 7 complement fixation tests elicited clearly positive reactions at a titer of 1/10; in 2 the reaction was clearly positive at a titer of 1/20. In 11 Diyarbakir goats only one complement fixation test elicited a clearly positive reaction at a titer of 1/10 and 1 at a titer of 1/20. In 13 buffalo and in 10 cows all reactions were negative. Of 22 goats 5 had positive reactions. That sheep had a positive reaction at a titer of 2/10 points to the importance of carefully diagnosing pleuropneumonia in goats. Prof. G. Blanc's research in North Africa is important evidence that in goats Q fever is a dangerous disease and is transmitted from animal to man.

Of the 37 typical pneumonia serums from the Ankara Model Hospital the complement fixation reaction was positive in 5 cases; in 1 at a titer of 1/40 and in 4 at a titer of 1/20. In 32 the reaction was negative. Of the 101 atypical pneumonia serums 76 gave negative reactions; these patients had from six to fifteen days' hospital treatment. In 25 cases the complement fixation reaction was positive; of these 7 had a 1/10 titer, four 1/20, five 1/40 and nine 1/80 to 1/320. Several of the positive serums were forwarded to Dr. Lackman of the United States Rocky Mountain Laboratory for verification. One 1/80 titer serum Dr. Lackman found to have a titer of 1/120; the 1/160 titer, 1/1,028 and the 1/80 titer guinea pig serum 1/1,020. The discrepancies are probably the result of a difference in technique. As repeated serum tests during convalescence were carried out in only 3 cases, it was not possible to observe the increase of antibody in cases with negative reactions. The citrated blood of 16 patients was injected into 24 guinea pigs; though there had not been many patients who came under observation on the first to fourth day from the onset of the disease, rickettsiae were isolated by the eighth day. The blood of 6 patients from Ankara and 1 from Smyrna raised the temperature of 7 inoculated guinea pigs; necropsy of these guinea pigs revealed splenomegaly and Rickettsia burneti in the spleen preparation. The two institute stocks have passed through six guinea pigs. Relapses were observed in several of the guinea pigs when blood from the heart was used for passage.

In the Smyrna medical bulletin *Acta Medica* Dr. Lutfi Senirkent of the Smyrna Infectious Hospital has published results of his investigations concerning Q fever. Six patients from the environs of Smyrna, male and female, aged 17 to 70, had been sent to the hospital by the municipality physicians with the diagnosis of pneumonia or typhus. Several patients presented the usual symptoms of pneumonia; several had also a purpuric rash; livers were palpable and spleens large. All patients perspired freely. The crisis occurred on the ninth to fourteenth day; after that the temperature dropped gradually. All patients were given sulfonamide compounds or penicillin, but neither drug had any great effect. At the Central Institute of Hygiene the complement fixation reactions were found to be positive at titers of 1/20 and 1/40. Experiments on guinea pigs revealed Rickettsia burneti. In 5 patients symptoms of pneumonia were either absent or only slight, presenting the picture of a common infection. In the blood of 4 of these patients rickettsiae were found, but in only 1 was the complement fixation reaction positive at a titer of 1/20. The symptoms in several other cases, severe headaches, much perspiration and conjunctivitis, resembled those of typhus; all patients recovered. Investigations continue.

BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, Sept. 14, 1948.

Follow-Up in Gastric Surgery

In a recent paper, Drs. Arrigo Raia and Claudio Bellio of the faculty of medicine of São Paulo reported the follow-up of 640 patients submitted to partial gastrectomy during the period 1936 to 1946. Only 273 answered letters, periodically sent to them to inquire about their condition after the operation. A number of patients were free of all symptoms in the first six months after operation; others wrote of certain symptoms which lasted from six months to five years. Analysis of these symptoms reveals that the three most distressing are recurrence of the peptic ulcer, the dumping syndrome and loss of weight. None of the patients had pernicious anemia. The authors concluded that although partial gastrectomy is not the ideal treatment for the gastroduodenal ulcer, it practically solves the problem and should be performed without fear.

Waters' Extraperitoneal Cesarean Section

After a careful analysis of obstetric cases complicated by infection, Drs. João Amorim, Fuad Ferreira and Jorge Tavares made a survey of the extraperitoneal technique and decided that Waters' method is the best both for the mother and the child in cases of infection during labor. Attention was drawn to the mortality rate when transperitoneal cesarean section was performed even though massive doses of penicillin and sulfonamide drugs were given. Forty cases were analyzed after operation in the Casa Maternal e da Infância and the difficulties and how to overcome them studied with regard to Waters' technique. These cases have been excellently grouped by the North Americans; the same indications were adopted in the Casa Maternal to determine whether to use the transperitoneal or the extraperitoneal method.

Treatment of Pemphigus Foliaceus

Dr. Mario Fonzari, assistant at the Institute of Foliaceus Pemphigus of São Paulo, has published a paper on this disease. According to his observations patients can take quinacrine in doses of 0.20 to 1 Gm. a day for several months without disturbances. The dose which gives best results varies from patient to patient, but improvement has always been obtained with doses varying from 0.40 to 0.60 Gm. a day. After months or even years of continued treatment, only a few residual lesions remained. Treatment may be interrupted after persistent

improvement has been established, but the skin lesions grow worse with interruption of therapy before a constant result is obtained. Yellow pigmentation of the skin is not a sign of intoxication but one of benefit by quinacrine. The author noticed steady improvement only in patients whose skin became intensely yellow. This pigmentation disappears in time, whether the patient goes on with the treatment or not. Patients treated and improved with quinacrine present from time to time eruptions of small boils, which are easily treated with sulfonamide drugs and penicillin. Quinacrine does not act on secondary effects and does not prevent the pain in the bones which occurs frequently in persons suffering from pemphigus and which disappear with the administration of high doses of vitamin D.

Correspondence

METHADON ADDICTION

To the Editor:—There is evidence of increasing use by drug addicts of the new synthetic drug, methadon (6-dimethylamino-4,4-diphenyl-3-heptanone, also known by the trade names "dolophine" and "adanon") to gratify drug addiction. The result of a special observation of this trend in one district—which can be considered as substantially representative of the general trend in all districts—shows that most of these addicts are obtaining their supplies of "dolophine," for example, through narcotic "prescriptions" issued by registered practitioners. While this special observation related to use of the drug under the name "dolophine," the irregularities can be considered likewise incident to the use of methadon or "adanon," which are, of course, other names for the same drug.

An investigating officer of this Bureau found that a large number of the addicts using methadon had previously confined their addiction to the use of morphine or heroin. He interviewed a number of these addicts and learned from them that methadon has the same effects on them as morphine or heroin with but two exceptions. The first exception is that on administering morphine or heroin hypodermically they experience what they describe as a tingling sensation. This "tingle" is absent in the use of methadon. The second exception is that the withdrawal symptoms experienced on the removal of methadon are not as severe as those symptoms experienced on the removal of heroin or morphine. However, the methadon withdrawal symptoms are very definite. The general over-all effect of methadon satisfies the craving of the morphine and heroin addict with the same disastrous results.

It was also found that a majority of the narcotic addicts are now requesting physicians to prescribe "dolophine" for them instead of asking the physician to prescribe morphine. The addicts claim that when they approach a physician and furnish him with fictitious symptoms of some condition which may require narcotics, if they request or suggest morphine the physician immediately classes them as narcotic addicts. Under these circumstances the physician proceeds with caution and usually refuses to prescribe for them. However, they have found that if under similar circumstances they request "dolophine" instead of morphine the physician will usually prescribe for them.

One of the methods used by the addict to obtain "dolophine" from a physician is to have the name written on a piece of paper. He then complains to the physician of the severe pain he is suffering. He tells the physician that he does not wish to take any habit-forming drug such as morphine but understands that the drug written on the paper is good for pain and is not habit forming. In any case the addict is seldom met with resistance from the physician when a treatment of "dolophine" is suggested by the addict. When these addicts are again in

a position to purchase morphine or heroin from the illegal channels they resume their use of these narcotic drugs.

The officer also discussed the subject of methadon with a number of physicians. He found that a majority of the physicians were under the impression that methadon was not habit forming and therefore they prescribed methadon more freely and in larger quantities than morphine or other opium derivatives. Although realizing that methadon is regulated under the federal narcotic laws some physicians claimed that it was not an opiate inasmuch as it is a synthetic drug and not a derivative of opium. Among the physicians in general it was found that they were not adequately informed regarding the addiction-forming qualities of methadon and in some cases were misinformed.

Certain narcotic addicts do not wish to take the risk of being brought to the attention of the narcotic officers by visiting physicians. The officer learned from various sources that this class of addict when not in a position to obtain morphine or heroin will purchase methadon from peddlers who obtain their supply on "prescriptions" or through drug store burglaries. The latter source is substantiated by the fact that methadon is almost always included in the narcotic drugs taken by burglars.

H. J. ANSLINGER,

Commissioner of Narcotics, Washington, D. C.

DIAGNOSIS OF MALIGNANCY

To the Editor:—A recent article in THE JOURNAL gives voice to a statement which is occasionally made, sometimes accepted and too often practiced; yet it should not go unchallenged lest it be assumed by others that the idea is approved by a wide circle of the author's pathologist colleagues. This letter is not a challenge to the author's main thesis on the value of heterologous tissue transplants (Greene, H. S. N.: Identification of Malignant Tissues, J. A. M. A. 137:1364-1365 [Aug. 14] 1948), but only to an introductory statement to the effect that the characterization of tissues as malignant or cancerous is based solely on morphologic considerations in most laboratories. The idea is a half truth as it stands. The diagnosis is not usually solely so based, but rather on morphologic considerations interpreted in the light of subsequent course in a large past experience with similar tumors. Such interpretation is justified in cases of the common tumors in which a large experience correlating morphology with the natural biologic behavior and life history of the tumors has been accumulated. The efficacy of the method is attested to by the high degree of skill exhibited by some of its users and the tacit confidence expressed in the results by their clinical confreres. The method occasionally falls into disrepute when it is abused by (a) failure of the user to acquire skill in the use of existing accumulated knowledge in the correlation of morphologic features with degree of malignancy or (b) use of method to estimate degree of malignancy in the case of rare or new tumors in the absence of previous specific experience. Some tumors are biologically more malignant and others less malignant than their histologic appearance suggests; yet which is which can only be known after observation of the subsequent behavior in a series of cases. Morphologic considerations cannot always be safely transferred from tumors of one type to another. A method of proved value should, however, not be judged by its misuse. The human host to tumor has, unfortunately, too often through the past years served as a biologic indicator for the degree of malignancy for many tumors the histologic morphology of which was known, so that a high degree of correlation is now possible.

PAUL E. STEINER, M.D.,

Professor of Pathology, University of Chicago.

had been free from fever for several days again showed lesions. The leukocyte count on the fourth day of the disease was 9,600, on the seventh 8,300 and on the eighth day 8,000.

Every third day mice were inoculated with sputum. There were no deaths among the mice, but the sputum had revealed no pneumococcus. On the eleventh day the fever gradually came to normal. Sulfonamide and penicillin treatment had not been effective; a complement fixation test made one year later revealed a serum titer of 1/80, with a reaction of 2 plus and heated serum agglutination a titer of 1/4. This serum was sent to the United States Rocky Mountain Spotted Fever Laboratory, where the titer was found to be 1/128.

The second patient was Dr. Mahmud Sabit Akalin, formerly director of the Central Institute of Hygiene, who was treated at his home. The third was a boy aged 17 with the usual symptoms of pneumonia; radioscopy revealed lesions at the base of the left lung. The leukocyte count was 7,400. On the fifth day a guinea pig was inoculated with blood from the patient, but there was no rise in temperature. A complement fixation test of the patient's serum elicited a negative reaction on the fourth day, but on the eighteenth day gave a positive reaction at a titer of 1/15.

The serum of 60 animals was also tested. In 4 guinea pigs during convalescence from Q fever, the complement fixation reaction at a titer of 1/10 and 1/20 was clearly positive and in 1 guinea pig positive at a titer of 1/80; in 3 guinea pigs strongly positive at a titer of 1/40. Rickettsia agglutination was clearly positive at titers of 1/4 and 1/8. In 11 Angora goats only three complement fixation tests elicited positive reactions at titers of 1/10 and 1/20; all other tests elicited negative reactions. In 12 Angora sheep 7 complement fixation tests elicited clearly positive reactions at a titer of 1/10; in 2 the reaction was clearly positive at a titer of 1/20. In 11 Diyarbakir goats only one complement fixation test elicited a clearly positive reaction at a titer of 1/10 and 1 at a titer of 1/20. In 13 buffalo and in 10 cows all reactions were negative. Of 22 goats 5 had positive reactions. That sheep had a positive reaction at a titer of 2/10 points to the importance of carefully diagnosing pleuropneumonia in goats. Prof. G. Blanc's research in North Africa is important evidence that in goats Q fever is a dangerous disease and is transmitted from animal to man.

Of the 37 typical pneumonia serums from the Ankara Model Hospital the complement fixation reaction was positive in 5 cases; in 1 at a titer of 1/40 and in 4 at a titer of 1/20. In 32 the reaction was negative. Of the 101 atypical pneumonia serums 76 gave negative reactions; these patients had from six to fifteen days' hospital treatment. In 25 cases the complement fixation reaction was positive; of these 7 had a 1/10 titer, four 1/20, five 1/40 and nine 1/80 to 1/320. Several of the positive serums were forwarded to Dr. Lackman of the United States Rocky Mountain Laboratory for verification. One 1/80 titer serum Dr. Lackman found to have a titer of 1/120; the 1/160 titer, 1/1,028 and the 1/80 titer guinea pig serum 1/1,020. The discrepancies are probably the result of a difference in technic. As repeated serum tests during convalescence were carried out in only 3 cases, it was not possible to observe the increase of antibody in cases with negative reactions. The citrated blood of 16 patients was injected into 24 guinea pigs; though there had not been many patients who came under observation on the first to fourth day from the onset of the disease, rickettsiae were isolated by the eighth day. The blood of 6 patients from Ankara and 1 from Smyrna raised the temperature of 7 inoculated guinea pigs; necropsy of these guinea pigs revealed splenomegaly and Rickettsia burneti in the spleen preparation. The two institute stocks have passed through six guinea pigs. Relapses were observed in several of the guinea pigs when blood from the heart was used for passage.

In the Smyrna medical bulletin *Acta Medica* Dr. Lutfi Senirkent of the Smyrna Infectious Hospital has published results of his investigations concerning Q fever. Six patients from the environs of Smyrna, male and female, aged 17 to 70, had been sent to the hospital by the municipality physicians with the diagnosis of pneumonia or typhus. Several patients presented the usual symptoms of pneumonia; several had also a purpuric rash; livers were palpable and spleens large. All patients perspired freely. The crisis occurred on the ninth to fourteenth day; after that the temperature dropped gradually. All patients were given sulfonamide compounds or penicillin, but neither drug had any great effect. At the Central Institute of Hygiene the complement fixation reactions were found to be positive at titers of 1/20 and 1/40. Experiments on guinea pigs revealed Rickettsia burneti. In 5 patients symptoms of pneumonia were either absent or only slight, presenting the picture of a common infection. In the blood of 4 of these patients rickettsiae were found, but in only 1 was the complement fixation reaction positive at a titer of 1/20. The symptoms in several other cases, severe headaches, much perspiration and conjunctivitis, resembled those of typhus; all patients recovered. Investigations continue.

BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, Sept. 14, 1948.

Follow-Up in Gastric Surgery

In a recent paper, Drs. Arrigo Raia and Claudio Bellio of the faculty of medicine of São Paulo reported the follow-up of 640 patients submitted to partial gastrectomy during the period 1936 to 1946. Only 273 answered letters, periodically sent to them to inquire about their condition after the operation. A number of patients were free of all symptoms in the first six months after operation; others wrote of certain symptoms which lasted from six months to five years. Analysis of these symptoms reveals that the three most distressing are recurrence of the peptic ulcer, the dumping syndrome and loss of weight. None of the patients had pernicious anemia. The authors concluded that although partial gastrectomy is not the ideal treatment for the gastroduodenal ulcer, it practically solves the problem and should be performed without fear.

Waters' Extraperitoneal Cesarean Section

After a careful analysis of obstetric cases complicated by infection, Drs. João Amorim, Fuad Ferreira and Jorge Tavares made a survey of the extraperitoneal technics and decided that Waters' method is the best both for the mother and the child in cases of infection during labor. Attention was drawn to the mortality rate when transperitoneal cesarean section was performed even though massive doses of penicillin and sulfonamide drugs were given. Forty cases were analyzed after operation in the Casa Maternal e da Infância and the difficulties and how to overcome them studied with regard to Waters' technic. These cases have been excellently grouped by the North Americans; the same indications were adopted in the Casa Maternal to determine whether to use the transperitoneal or the extraperitoneal method.

Treatment of Pemphigus Foliaceus

Dr. Mario Fonzari, assistant at the Institute of Foliaceus Pemphigus of São Paulo, has published a paper on this disease. According to his observations patients can take quinacrine in doses of 0.20 to 1 Gm. a day for several months without disturbances. The dose which gives best results varies from patient to patient, but improvement has always been obtained with doses varying from 0.40 to 0.60 Gm. a day. After months or even years of continued treatment, only a few residual lesions remained. Treatment may be interrupted after persistent

improvement has been established, but the skin lesions grow worse with interruption of therapy before a constant result is obtained. Yellow pigmentation of the skin is not a sign of intoxication but one of benefit by quinacrine. The author noticed steady improvement only in patients whose skin became intensely yellow. This pigmentation disappears in time, whether the patient goes on with the treatment or not. Patients treated and improved with quinacrine present from time to time eruptions of small boils, which are easily treated with sulfonamide drugs and penicillin. Quinacrine does not act on secondary effects and does not prevent the pain in the bones which occurs frequently in persons suffering from pemphigus and which disappear with the administration of high doses of vitamin D.

Correspondence

METHADON ADDICTION

To the Editor:—There is evidence of increasing use by drug addicts of the new synthetic drug, methadon (6-dimethylamino-4,4-diphenyl-3-heptanone, also known by the trade names "dolophine" and "adanon") to gratify drug addiction. The result of a special observation of this trend in one district—which can be considered as substantially representative of the general trend in all districts—shows that most of these addicts are obtaining their supplies of "dolophine," for example, through narcotic "prescriptions" issued by registered practitioners. While this special observation related to use of the drug under the name "dolophine," the irregularities can be considered likewise incident to the use of methadon or "adanon," which are, of course, other names for the same drug.

An investigating officer of this Bureau found that a large number of the addicts using methadon had previously confined their addiction to the use of morphine or heroin. He interviewed a number of these addicts and learned from them that methadon has the same effects on them as morphine or heroin with but two exceptions. The first exception is that on administering morphine or heroin hypodermically they experience what they describe as a tingling sensation. This "tingle" is absent in the use of methadon. The second exception is that the withdrawal symptoms experienced on the removal of methadon are not as severe as those symptoms experienced on the removal of heroin or morphine. However, the methadon withdrawal symptoms are very definite. The general over-all effect of methadon satisfies the craving of the morphine and heroin addict with the same disastrous results.

It was also found that a majority of the narcotic addicts are now requesting physicians to prescribe "dolophine" for them instead of asking the physician to prescribe morphine. The addicts claim that when they approach a physician and furnish him with fictitious symptoms of some condition which may require narcotics, if they request or suggest morphine the physician immediately classes them as narcotic addicts. Under these circumstances the physician proceeds with caution and usually refuses to prescribe for them. However, they have found that if under similar circumstances they request "dolophine" instead of morphine the physician will usually prescribe for them.

One of the methods used by the addict to obtain "dolophine" from a physician is to have the name written on a piece of paper. He then complains to the physician of the severe pain he is suffering. He tells the physician that he does not wish to take any habit-forming drug such as morphine but understands that the drug written on the paper is good for pain and is not habit forming. In any case the addict is seldom met with resistance from the physician when a treatment of "dolophine" is suggested by the addict. When these addicts are again in

a position to purchase morphine or heroin from the illegal channels they resume their use of these narcotic drugs.

The officer also discussed the subject of methadon with a number of physicians. He found that a majority of the physicians were under the impression that methadon was not habit forming and therefore they prescribed methadon more freely and in larger quantities than morphine or other opium derivatives. Although realizing that methadon is regulated under the federal narcotic laws some physicians claimed that it was not an opiate inasmuch as it is a synthetic drug and not a derivative of opium. Among the physicians in general it was found that they were not adequately informed regarding the addiction-forming qualities of methadon and in some cases were misinformed.

Certain narcotic addicts do not wish to take the risk of being brought to the attention of the narcotic officers by visiting physicians. The officer learned from various sources that this class of addict when not in a position to obtain morphine or heroin will purchase methadon from peddlers who obtain their supply on "prescriptions" or through drug store burglaries. The latter source is substantiated by the fact that methadon is almost always included in the narcotic drugs taken by burglars.

H. J. ANSLINGER,
Commissioner of Narcotics, Washington, D. C.

DIAGNOSIS OF MALIGNANCY

To the Editor:—A recent article in THE JOURNAL gives voice to a statement which is occasionally made, sometimes accepted and too often practiced; yet it should not go unchallenged lest it be assumed by others that the idea is approved by a wide circle of the author's pathologist colleagues. This letter is not a challenge to the author's main thesis on the value of heterologous tissue transplants (Greene, H. S. N.: Identification of Malignant Tissues, J. A. M. A. **137**:1364-1365 [Aug. 14] 1948), but only to an introductory statement to the effect that the characterization of tissues as malignant or cancerous is based solely on morphologic considerations in most laboratories. The idea is a half truth as it stands. The diagnosis is not usually solely so based, but rather on morphologic considerations interpreted in the light of subsequent course in a large past experience with similar tumors. Such interpretation is justified in cases of the common tumors in which a large experience correlating morphology with the natural biologic behavior and life history of the tumors has been accumulated. The efficacy of the method is attested to by the high degree of skill exhibited by some of its users and the tacit confidence expressed in the results by their clinical confreres. The method occasionally falls into disrepute when it is abused by (a) failure of the user to acquire skill in the use of existing accumulated knowledge in the correlation of morphologic features with degree of malignancy or (b) use of method to estimate degree of malignancy in the case of rare or new tumors in the absence of previous specific experience. Some tumors are biologically more malignant and others less malignant than their histologic appearance suggests; yet which is which can only be known after observation of the subsequent behavior in a series of cases. Morphologic considerations cannot always be safely transferred from tumors of one type to another. A method of proved value should, however, not be judged by its misuse. The human host to tumor has, unfortunately, too often through the past years served as a biologic indicator for the degree of malignancy for many tumors the histologic morphology of which was known, so that a high degree of correlation is now possible.

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Medical Economics

THE COST AND QUANTITY OF MEDICAL CARE IN THE UNITED STATES

NOTE.—Summary of a monograph of the same title, "The Cost and Quantity of Medical Care in the United States," by Frank G. Dickinson, Ph.D., Director of the Bureau of Medical Economic Research of the American Medical Association. The 20 page monograph has just been published as Bureau Bulletin Number 66.—Ed.

In September 1947, the Bureau of Medical Economic Research published an analysis of consumer expenditures for medical care for 1929-1946 under the title "Is Medical Care Expensive?"¹ The Department of Commerce has recently released consumer expenditure estimates for 1947 along with a revision of its previously published data for 1944-1946.² In addition to discussing these new and revised data, Dr. Dickinson has expanded the scope of the Bureau's study to include an analysis of changes in the quantity of medical care received by the American people. In Bulletin 66 he combines the index of consumer expenditures with the Department of Labor price index previously discussed³ in order to develop an index of the quantity of medical care for 1940-1947.

Before discussing three aspects of medical care—expenditures, price and quantity—the bulletin compares the original and the revised Department of Commerce estimates for 1944, 1945 and 1946. The earlier estimates of total consumer expenditures were increased by 0.9 per cent for 1944, 0.9 per cent for 1945 and 2.6 per cent for 1946; corresponding increases in medical care expenditure estimates were 2.8 per cent, 3.8 per cent and 4.9 per cent. Of the total upward revision of \$984 million for 1944, \$134 million, or 14 per cent, was distributed among medical care items. Approximately 16 per cent and 7 per cent of the increases for 1945 and 1946 were allocated to medical care. "In view of the fact that medical care generally accounts for about one twenty-fifth (4 per cent) of total consumer expenditures, the allocation of one fourteenth to one seventh of the increases to medical care is, to say the least, surprising."

Unfortunately, the revised data for 1944-1946 were published without any explanation of this disproportionate increase in the medical care estimates. In support of the revised data, well informed members of the staffs of the American Hospital Association and the American Dental Association consider the upward revisions for hospitals and dentists' services (which were substantially greater than the revisions for physicians' services) to be more nearly accurate than the earlier estimates. Despite this fact, Dr. Dickinson raises a question as to whether these new and revised data are consistent with the consumer expenditure series for 1929-1943. Pending some explanation by the Department of Commerce, he therefore analyzes the 1944-1947 consumer expenditure data with as little reference as possible to previously published expenditure data.

EXPENDITURES

The Department of Commerce data show that consumer expenditures for medical care rose from \$4.9 billion in 1944 to \$6.5 billion in 1947, or 34 per cent, while total consumer expenditures rose from \$111.4 billion to \$164.8 billion, or 48 per cent. Expressed as a percentage of total consumer expenditures, the amount spent for all medical care items declined from 4.4 per cent in 1944 to 4.0 per cent in 1947. Within the medical care field, consumer expenditures for physicians' services rose from \$1.3 billion in 1944 to \$1.7 billion in 1947, or 24 per cent, while expenditures for hospitals rose 67 per cent, for drugs 26 per cent, for dentists' services 28 per cent and for all other medical care items combined 32 per cent. The percentage of total consumer expenditures for physicians' services declined from 1.2 in 1944 to 1.0 in 1947, while the percentage for hospitals rose from 0.7 to 0.8. Dr. Dickinson observes that

these changes over the past four years are conditioned by the fact that 1944 was a year when 40 per cent of physicians were in the armed forces and the normal pattern of consumer expenditures was distorted by wartime shortages and rationing. Summarizing the data for 1944-1947, he notes that expenditures for medical care have increased, but less rapidly than total consumer expenditures. The percentage of the American family budget spent for medical care, particularly for physicians' services, has declined. The physicians' share of the medical care dollar has decreased from 27.4 cents in 1944 to 25.5 cents in 1947; meanwhile the hospitals' share has risen from 16.4 cents to 20.5 cents. "One might say that medical care has become increasingly expensive in the past four years but that, relative to the other items which make up the average consumer's budget, the cost of medical care has declined (in particular, the physicians' share of that cost)."

As in the previous study, the new bulletin presents an extensive comparison of medical care expenditures with expenditures for alcoholic beverages, recreation, tobacco, personal care and jewelry. These five items were selected because they are comparable to medical care or its subcategories in magnitude of expenditure and because, like medical care, they are generally purchased or used irregularly. In order to provide a broader basis for comparison, the bulletin includes expenditure data for six additional items—owner-occupied nonfarm dwellings, shoes, furniture, fuel except gas and ice, household utilities and user-operated transportation. The analysis of expenditures for these selected items reveals that Americans spend almost 50 per cent more for both alcoholic beverages and recreation than for all medical care items combined; physicians' services account for one-half as much of the average budget as tobacco and somewhat less than personal care, and consumers spend less for hospitals than for jewelry.

In the light of these consumer expenditure data, Dr. Dickinson challenges the oft-repeated statement that Americans cannot afford good medical care. Since the average family spends only 4 per cent of its budget for medical care, the statement could apply only to those relatively few families with disproportionately heavy medical expenses in a given year. To a great and increasing extent these families are now offered a choice between "bludgeon and budget" by the various prepayment medical care and hospitalization insurance plans now widely available. Although personal savings are still necessary to help meet catastrophic and minor medical costs, these prepayment plans "give most families the chance to become average (or 4 per cent) families with regard to the budget for medical care."

PRICES

The Consumers' Price Index, the medical care portion of which is presented in the bulletin, covers only the prices paid by moderate income families in thirty-four large cities. Despite this limitation, the index is generally considered to be representative of the entire nation, as shown by its use in wage negotiations for the purpose of gearing wages to changes in the cost of living. Between the base period 1935-1939 and 1947, the over-all price index rose 59.2 per cent while the index of medical care prices rose only 31.6 per cent. Thus the cost of living has increased almost twice as much in the past decade as the cost of medical care. The price data for the individual items of medical care show that only the index for hospital room rates (179.6) stood above the Consumers' Price Index in 1947; this fact is explained by the increased cost of labor, food and other items necessary to operate a hospital.

QUANTITY

By dividing the index of consumer expenditures for medical care items by the price index for those same items, Dr. Dickinson has derived an index of the quantity of medical care. This statistical procedure is called "deflation of the dollar series" and is based on the fact that consumer expenditures for a given item are equal to the product of the price of that item and the total quantity purchased. The reader is cautioned that the indexes of quantity presented in the bulletin are realistic only in so far as the price indexes used in the deflation procedure cover exactly the same group of items as the indexes of consumer expenditures and weight these items according to the relative amounts purchased in some satisfactory base year.

1. Is Medical Care Expensive? Bulletin 60, American Medical Association, Bureau of Medical Economic Research, September 1947.

2. Survey of Current Business, United States Department of Commerce, July 1948.

3. Comparative Increases in the Costs of Medical Care and in the Costs of Living, Bulletin 62, American Medical Association, Bureau of Medical Economic Research, May 1948.

The results of the deflation procedure indicate that the quantity of all medical care items combined has increased 90 per cent in the past decade while the quantity of physicians' services has increased 60 per cent, hospitals 70 per cent, dentists' services 90 per cent and drugs 110 per cent. Several reasons are cited for believing that these derived indexes of quantity actually overstate increases in the volume of medical care during the past ten years. For example, the larger percentage of bills collected by physicians is reflected in the derived index as an increase in the quantity of physicians' services. Despite this and other limitations of the data, the conclusions reached in the bulletin are that the quantity of medical care received by the American people has been increasing rapidly in the past decade and that the quantity of physicians' services has increased considerably faster than the number of physicians. These increases in output per physician probably match similar increases in output per man hour in our great factories. These conclusions are not surprising in view of the fact that technologic improvements in medicine enable the physician to care for many more patients today than he could ten years ago. "The typical physician is now assisted by nurses, technicians, and 'wonder drugs'; diagnosis and treatment have become a matter of teamwork."

As Dr. Dickinson observes, increases in the quantity of medical care during the past decade have been accompanied by improvements in quality. "The difference between 1929 medical care and 1947 medical care probably equals or exceeds the difference between a 1929 automobile and a 1947 automobile." The benefits of these quantitative and qualitative changes in medical care are being received by the consumer in the form of better health and longer life. But no amount of improvement in medical care will satisfy the demand "as long as pain comes too often and death too soon. Members of the medical care team have an unlimited opportunity to improve medical care and at the same time are exposed to the hazard of attaining one goal only to find that the goal has been moved up. The demand for improved medical care is well-nigh insatiable, and those who try to provide it are subject to easy criticism."

Medical Motion Pictures

NEW MOTION PICTURES ADDED TO THE A. M. A. LIBRARY

The following 16 mm. motion pictures are available on a loan basis to physicians through the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

Human Growth. Color, sound, 750 feet (1 reel), showing time nineteen minutes. Produced by Eddie Albert Productions, Hollywood, for the University of Oregon.

This motion picture is based on adolescence and presents the biologic facts of sex as a part of human growth and development, demonstrating to parents how sex education can be handled smoothly, intelligently and in a socially acceptable manner in schools. It is designed primarily for the sixth through the eighth grade level.

Human Reproduction. Black and white, sound, 825 feet (1 reel), showing time twenty-three minutes. Prepared by Harold S. Diehl, M.D., University of Minnesota, Minneapolis, for correlation with the "Textbook of Healthful Living."

The anatomy and physiology of the human reproductive system with explanation of ovulation and menstruation are depicted in this film. This production is suitable for college groups, selected high school groups, nurses, teachers and parents. (Reviewed in THE JOURNAL, May 15, 1948, p. 323.)

A Life in Your Hands. Black and white, sound, showing time nine minutes. Produced by The March of Time Forum for the American National Red Cross.

The film describes the new National Blood Program and portrays why this program is so urgent at this time.

Physicians called on to address lay audiences, such as Service Organizations and Parent-Teachers' Association, may find these films a useful adjunct in their lectures.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Osteopathic Practice Acts: Right of Osteopath to Prescribe Drugs or Medicine.—The defendant, a licensed osteopath, was prosecuted under an indictment charging that he practiced medicine by administering and prescribing drugs in treating the ailments of others without being licensed and registered so to do. From a finding of guilty in the trial court the defendant appealed to the Supreme Court of North Carolina.

The evidence showed that the accused engaged in the practice of the healing art for compensation. By means of a printed professional card he represented himself to be a "physician and surgeon." He examined his patients, diagnosed their ailments and determined the remedies to be applied. He administered ultraviolet rays to those suffering from cutaneous diseases and relied on hypodermic injections of alcohol and "liver extracts" for the alleviation of certain other ailments. On at least two occasions, he gave a patient afflicted with low blood pressure injections of a liquid which he represented to be a "heart stimulant." On numerous occasions, the accused directed his patients to procure from druggists and to use either internally or externally in the treatment of their ailments various patent or proprietary preparations possessing or reputed to possess curative or remedial properties. He said that he "couldn't write prescriptions" and did not issue any written prescriptions covering any of these substances, but he gave oral orders therefor to the druggists, and the druggists delivered the preparations to his patients in bottles or other containers bearing statements of his directions with respect to their mode of administration. A few of these patent or proprietary remedies were laxatives or tonics.

The defendant held a certificate from the North Carolina State Board of Osteopathic Examination and Registration entitling him to practice osteopathy, but he had never received a license to practice medicine and surgery from the North Carolina State Board of Medical Examiners and had never registered as a physician or surgeon with the clerk of the superior court of Richmond County. This appeal, said the Supreme Court, presents this fundamental question: Is an osteopathic physician duly licensed by the North Carolina State Board of Osteopathic Examination and Registration entitled under the law to administer or prescribe drugs in treating the ailments of his patients?

Licenses to practice medicine and surgery, said the Supreme Court, are granted by the State Board of Medical Examiners under article 1 of chapter 90 of the General Statutes and certificates to practice osteopathy are issued by the State Board of Osteopathic Examination and Registration under article 7 of chapter 90 of the General Statutes. An inspection of these statutes makes it evident that the legislature regards the practice of medicine and surgery as one thing and the practice of osteopathy as another. The legislature enacted statutes requiring applicants for licenses to practice medicine and surgery to attend medical schools, to take courses calculated to equip them to administer and prescribe drugs and use surgical instruments and to undergo examination as to proficiency to practice medicine and surgery by a licensing board composed of regularly graduated physicians appointed by the North Carolina Medical Society. In like manner the legislature decreed that applicants for certificates to practice osteopathy should attend colleges of osteopathy, pursue studies designed to qualify them to treat diseases without the use of drugs and undergo examination as to competency to practice osteopathy by a licensing board composed of practitioners of osteopathy appointed by the governor on the recommendation of the North Carolina Osteopathic Society. It is significant that the legislature specifies that applicants for licenses to practice medicine and surgery shall study the subjects of materia medica and therapeutics but makes no such requirement with respect to applicants for certificates to practice osteopathy. It is also significant that a licensed

osteopath is designated as an osteopathic physician by the legislature.

There is no lack of clarity in the meaning of "osteopathy" either in language or in law, the Supreme Court continued. It is the very antithesis of any science of medicine involving the use of drugs. In fact, said the court, a prior decision in North Carolina recognized that osteopathy is a "mode of treatment which absolutely excludes medicines and surgery from its pathology." The defendant contended, however, that the medical practice act imposed on the state the burden of showing beyond a reasonable doubt "that the action or practice with which the defendant, a duly licensed osteopathic physician, is charged was not taught in the recognized colleges of osteopathy." This contention, replied the Supreme Court, is interesting but not convincing. The statutes clearly contemplate that osteopathic physicians shall diagnose and treat diseases by employing osteopathy. The words "as taught by the various colleges of osteopathy recognized by the North Carolina Osteopathic Society" do not therefore set at large the signification of "osteopathy," permitting the colleges to give it any meaning they choose. The thing to be taught is osteopathy—"the science of healing without the use of drugs." The legislature merely authorizes the colleges to determine, select and teach the most desirable methods of doing what is comprehended within the term "osteopathy." The colleges, concluded the Supreme Court, cannot change the law of North Carolina or widen the scope of the osteopath's certificate so as to permit him to practice other systems of healing by the simple expedient of varying their curriculums. The conclusion is inescapable that the legislature has denied to licensed osteopaths the privilege of using drugs in their practice.

The defendant next contended that the testimony of the prosecution did not indicate that any of the substances mentioned in the evidence constituted drugs in a legal sense. He argued that no substance is a drug within the meaning of the laws governing the practice of osteopathy unless it is compounded pursuant to some individual formula, unless it is poisonous or unless it is habit forming in nature. We hold, said the Supreme Court, that in so far as the practice of osteopathy is concerned a "drug" is any substance used as a medicine or in composition of medicines for internal or external use, and a "medicine" is any substance or preparation used in treating disease. Hence, the term "drugs" embraces patent or proprietary remedies possessing or reputed to possess curative or remedial properties sold and used for medicines. This is true whether or not such remedies contain poisonous ingredients, whether or not they may be purchased without any direction from a physician or whether or not they can be obtained at retail stores generally.

The defendant then argued, however, that the evidence did not indicate that he had administered or prescribed any of the substances in question in treating the ailments of his patients. The evidence showed that he had given hypodermic injections of various substances to his patients in treating their ailments, said the court, and this was sufficient. A person administers drugs when he gives or applies drugs to a patient.

Finally, the defendant argued that it must be ruled as a matter of law that he did not prescribe drugs because he did not issue any written prescriptions. We are unwilling, said the Supreme Court, to hold that the law permits an osteopath to do by word of mouth what it forbids him to do with pen or pencil. The giving of any direction to a patient for the use or application by him of any drugs for the cure of any bodily disease is prescribing drugs. It is undoubtedly true that "the defendant cannot be convicted in this case for doing as an osteopathic physician what he would have a perfect legal right to do as a private citizen" and that a private citizen can suggest to friends the advisability of taking some medicine without running afoul of the law. But the evidence in this case does not intimate that the accused confined himself to recommending the use of some remedy to some acquaintances. It tends to show that he held himself out as an expert in medical affairs and in determining the proper remedies for ailments diagnosed by himself on the examination of his patients, that he gave oral directions through the medium of druggists to his patients with

respect to the mode of administering medicines which he told them to take for their ailments and that he charged his patients fees for so doing. Manifestly, this testimony was sufficient.

Accordingly the Supreme Court held that an osteopath is not entitled to administer drugs in the course of his practice and that the facts of the present case were sufficient to show that the defendant did administer drugs without having a license to practice medicine. The judgment of conviction was accordingly affirmed. *State v. Baker*, 48 S. E. (2d) 61 (N. C., 1948).

Malpractice: Liability of United States for Negligence of Army Surgeon.—The plaintiff filed an action under the federal Tort Claims Act against the United States for damages alleged to have been caused by an Army surgeon negligently leaving a towel in the plaintiff's abdomen in an operation for gallbladder trouble. The case was heard in the district court of the United States, district D, Maryland.

A previous report of this case (74 F. Supp. 209; J. A. M. A. 137:904 [July 3] 1948) involved a motion by the United States to dismiss this action on the ground that the federal Tort Claims Act did not apply. The motion was overruled without prejudice and the case proceeded to trial, at which it was found that a towel had in fact been negligently left in the plaintiff's abdomen or stomach by an agent or employee of the United States. The question then again arose as to whether or not the complaint should be dismissed. The federal Tort Claims Act permits suits against the United States for money damages.

The question of primary importance, said the court, is whether the federal Tort Claims Act covers the case, that is, does it apply to a suit by an enlisted soldier in the Army of the United States injured by the alleged negligence of an Army officer as a surgeon who performed the operation on the plaintiff or by his assistants in the operation who were employees in the United States Army. The problem of statutory construction now presented, the court continued, is whether the comprehensive phrase "any claim against the United States, for money only," without words of limitation as to classes of persons who may make the claim, should be narrowed by construction to exclude claims made by members of the armed forces of the United States for service-connected injuries sustained while in such service, in view of the special relationship long existing between the United States and members of its military forces and the large body of federal legislation on the subject. We reach the conclusion that the implied exception does exist in this case.

It is not unusual in statutory construction, the court went on, to limit a general phrase by other provisions appearing in the act as a whole. The situation here is different, however, in that the implied exception comes not from other wording of the act itself but from long-existing other legislation without cross reference from one to the other. Continuing, the court said that it is clear enough that the main purpose of the act was to waive the sovereign immunity of the United States with respect to the ordinary run of tort claims arising in the United States. But so far as I am aware, private bills for the benefit of soldiers for damages resulting from service-connected injuries were at least not common, in view of the long-established provisions for the armed forces, including the Veterans Administration established during or shortly after the first World War. What Congress must have specially had in mind, said the court, was the ordinary run of tort claims affecting ordinary citizens or others arising from time to time. Injuries sustained by members of the armed forces of the United States during their service could not be within the general scope of the kinds of actions to which the committee report on the federal Tort Claims Act was referring when it used the expression "common law tort," because it is clear enough that such injuries did not constitute common law or statutory torts under the laws of the several states. Again, said the court, it may be noted that section 410 (a) of the act also provides, with respect to the test of liability, as follows: "Subject to the provisions of this title, the United States shall be liable in respect of such claims, to the same claimants, in the same manner, and to the same extent, as a private individual under like circumstances." This phraseology is seemingly inapt if it had been the intention of Congress to give soldiers additional redress for service-connected dis-

abilities. It is hardly conceivable, the court concluded, to analogize the liability of the United States to that of a private individual in respect to service-connected disabilities in view of the government-soldier particular relationship.

After considering the case from seemingly every possible angle the court was of the opinion that the federal Tort Claims Act did not apply to this case where an ex-serviceman sued for damages for malpractice by a surgeon of the United States Army. The plaintiff's case was accordingly dismissed. *Jefferson v. United States*, 77 F. Supp. 706 (Md., 1948).

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II*. Various Centers, Feb., June, and Sept., 1949. *Part II*, April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa. *Part III*, Boston & New York, Nov. 9-11, Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*, Oct. 17, 1949. Final date for filing application is May 1. *Oral*, Philadelphia, Nov. 3-5, 1948; San Francisco, date not set. Candidates now eligible for the orals cannot be promoted a place in 1949. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wisc.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral*, Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNCOLOGY: *Part I*. Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written*, Jan. 14 *Oral*, San Francisco, March 21-24; New York, June 11-15; St. Louis, Oct. 15-19; Boston, Dec. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I*. Various Centers, April & May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral*, Atlantic City, Nov. 17-19. Sec., Dr. Lee E. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PHYSICAL MEDICINE: Atlantic City, June 4-5. Final date for filing application is March 15. Sec., Dr. R. L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF SURGERY: *Written*. Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Feb. 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18, Minn.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination*, Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARKANSAS: * Little Rock, Nov. 4-5. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic Examination*, Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral*, Los Angeles, Nov. 20-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * Denver, Jan. 4-7. Final date for filing application is Dec. 18. Sec.-Treas., Dr. W. W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * *Examination*, Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination*, Derby, Nov. 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination*, Dover, Jan. 11-13. *Endorsement*, Jan. 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA: * *Examination*, Jacksonville, Nov. 28-30. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GUAM: *Endorsement*, Agana, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

HAWAII: *Examination*, Honolulu, Jan. 10-13. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu 53.

IDAHO: Boise, Jan. 10-12. Dir., Bureau of Occupational Licenses, Miss Estella S. Mulliner, State House, Boise.

INDIANA: *Examination*, Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

IOWA: * *Examination*, Des Moines, Dec. 6-8. *Endorsement*, Des Moines, Dec. 6. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 903 N. 7th St., Kansas City.

KENTUCKY: *Examination*, Louisville, Dec. 13-15. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

LOUISIANA: *Examination*, New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Ithieria Bank Bldg., New Orleans 12. *Homeopathic Examination*, Baton Rouge, subject to call, Sec., Dr. F. H. Hardenstein, 715 Pete Marquette Bldg., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination*, Baltimore, Dec. 14-17. *Endorsement*, At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination*, Baltimore, Dec. 7-8. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination*, Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. G. L. Schadt, 413 E. State House, Boston.

MISSISSIPPI: *Reciprocity*, Jackson, Dec. 6. Exec. Officer, State Board of Health, Dr. Felix J. Underwood, Jackson.

MISSOURI: St. Louis, Oct. 25-27. Exec. Sec., Mr. John A. Hailey, P.O. Box 4, Jefferson City, Mo.

NEBRASKA: * *Examination*, Omaha, June. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Building, Lincoln 9.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW HAMPSHIRE: Concord, March 10. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW YORK: *Examination*, Various Centers, Feb. 1-4. Sec., Dr. J. L. Lochner, Jr., 23 S. Pearl St., Education Bldg., Albany.

NORTH CAROLINA: *Endorsement*, Wilson, Oct. 25. Sec., Dr. Ivan M. Procter, 226 Hillsboro St., Raleigh.

NORTH DAKOTA: *Examination*, Grand Forks, Jan. 4-7. Act. Sec., Dr. C. J. Gaspel, Grafton.

OHIO: *Examination*, Columbus, Dec. 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Reciprocity*, Oklahoma City, Oct. 24-25. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination*, Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH CAROLINA: *Endorsement*, Dec. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, Medical Arts Bldg., Fort Worth.

UTAH: *Examination*, Salt Lake City, July. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination*, Burlington, Feb. Sec., Dr. F. J. Lawliss, Richford.

VIRGIN ISLANDS: *Examination*, Charlotte Amalie, Dec. 8-9. Comm., Dr. Christian R. Moorhead, Charlotte Amalie.

VIRGINIA: *Examination*, Richmond, Dec. 3-4. *Endorsement*, Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wisc.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination*, Tucson, Dec. 21. Sec., Mr. Francis A. Roy, University of Arizona, Tucson.

COLORADO: *Examination*, Denver, Dec. 1-2. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

FLORIDA: *Examination*, Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

MICHIGAN: *Examination*, Ann Arbor & Detroit, Jan. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: *Examination*, Jan., April, June and Oct. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

NEW MEXICO: *Examination*, Santa Fe, Nov. 7. Sec., Miss Marguerite Kilkenny, 110 W. Houghton St., Santa Fe.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination*, Portland, Dec. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: *Examination*, Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: *Examination*, Memphis, Dec. 30-31. Sec., Dr. O. W. Hyman, 874 Union Avenue, Memphis 3.

WASHINGTON: Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: *Examination*, Milwaukee, Dec. 4. Final date for filing application is Nov. 27. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago 75:135-264 (Feb.) 1948

Lye Poisoning in Children. G. W. Kernodle, G. Taylor and W. C. Davison.—p. 135.

*Infantile Form of Pernicious (Addisonian) Anemia: Report of Long Term Study of Case. B. Benjamin.—p. 143.

*Delayed Onset of "Three Months' Colic in Premature Infants. P. P. Pierce.—p. 190.

*Control of Air-Borne Infections in Nursery for Young Infants. I. Rosenstern.—p. 193.

Botulism in New Mexico: Incidence Over Ten Years, with Report of 6 Cases. M. K. Wylder.—p. 203.

Infantile Form of Pernicious Anemia.—Benjamin points out that instead of a gradual loss of gastric intrinsic factor through degenerative disease there might be a congenital absence of this factor, with a resultant infantile form of pernicious anemia. He reports the case of an infant girl, the second of 2 siblings to fall ill with what appeared to be the same malady. Her symptoms began at the age of 12 months and slowly progressed to the point where she manifested the usual clinical and laboratory signs of pernicious anemia. Her response to liver therapy and the relapsing character of the illness in the absence of such therapy were closely observed over many years, and the accumulated data have been analyzed from a number of standpoints. The syndrome which is thought to be due to congenital absence of the intrinsic factor in the gastric secretions is characterized by an initial period of normal development, during which the infant utilizes the blood-building materials accumulated in its tissues during gestation by placental transmission. After several months there becomes evident a slowly progressive fall of erythrocytes and the development of a typical picture of pernicious anemia. The condition did not exhibit the tendency to spontaneous remissions which is characteristic of pernicious (addisonian) anemia in the adult.

Three Months' Colic in Premature Infants.—According to Pierce, so-called three months' colic, which is manifested by severe, prolonged, paroxysmal crying in infants during the early weeks after birth, is a well recognized problem. This type of behavior is seldom manifest in nurseries for newborn infants. Full term infants frequently begin to cry more when they are 2 to 3 weeks old. Recently the authors have observed paroxysmal crying in a number of premature infants. In these infants the onset was usually delayed by an interval commensurate with the period of prematurity. While an adequate explanation for this behavior is not available, it is believed that these observations lend further evidence to support the hypothesis that the onset and duration of this condition are determined, at least in part, by developmental factors.

Control of Air-Borne Infections in Nursery.—Rosenstern says that because of an epidemic of enteritis at The Cradle in 1927, during which 27 deaths occurred among 80 infants, an individual aseptic nursery technic was introduced by which hand-borne cross infections have been eliminated. For the prevention of air-borne cross infections, air conditioning, germicidal lights, mechanical barriers and face masks have been in use at The Cradle. Air conditioning alone did not prevent the spread of cross infections of the respiratory tract. Germicidal irradiation of the upper air and air conditioning reduced the number of cross infections of the respiratory tract. Germicidal light barriers and air conditioning were efficient, as were also mechanical barriers. The flannel and gauze mask worn by all attendants seemed to be of value in preventing transmission of infections of the respiratory tract from nurse to infant.

American Journal of Clinical Pathology, Baltimore 18:451-522 (June) 1948

Quantitative Estimation of Barbiturates in Blood by Ultra-Violet Spectrophotometry. J. T. Walker, R. S. Fisher and J. J. McHugh.—p. 451.
Quantitative Estimation of Barbiturates in Blood by Ultra-Violet Spectrophotometry. R. S. Fisher, J. T. Walker and C. W. Plummer.—p. 462.
Effect of Insulin on Blood Picture. E. E. Baird and K. P. Dixon.—p. 470.

Consideration of Use of Blood and Oxygen as Supportive Therapy in Treatment of Malaria. R. H. Ridgion.—p. 485.

*Clinical Evaluation of Hyaluronidase in Human Infertility. R. Kurzrok.—p. 491.

Agglutination Response Following Intracutaneous Skin Testing with Brucella Abortus Antigen. N. W. Elton.—p. 499.

Variations in Brucella Agglutination Reactions in Different Laboratories. J. F. Griggs and L. W. Case.—p. 506.

Isolation of Shigella from the Gallbladder in Bacillary Dysentery. A. van der Sar, A. W. Pot and P. H. Hartz.—p. 509.

Hyaluronidase in Human Infertility.—According to Kurzrok previous studies have led to the development of a simple test for hyaluronidase in human semen, which in turn has demonstrated that the hyaluronidase content increases with the sperm concentration up to 100,000,000 sperms per cubic centimeter. Specimens of semen with excellent concentrations of sperm may not contain any hyaluronidase. The author considers such specimens infertile. The hyaluronidase content of semen does not appear to be related to the morphology, motility or "percentage" of motility of sperms. Hyaluronidase was utilized clinically in the treatment of sterility. On the day prior to ovulation the cervix is exposed by a speculum and the excess mucus over the external os is wiped off. A thin sterile cotton applicator is then gently inserted into the cervical mucus of the external os. The applicator will then have adherent to it minute strands of cervical mucus. Ten to 20 mg. of hyaluronidase is placed on the watch glass. The applicator is rolled in the enzyme on the watch glass and is then reinserted into the external os. By gentle rotation of the applicator the adherent enzyme will remain in the mucus of the cervical canal. The entire maneuver may be repeated until all the enzyme on the watch glass has been transferred into the cervix. This method is not entirely adequate. Hyaluronidase was found to be of therapeutic value in human infertility in 33 of 102 selected patients. Hyaluronidase and the enzyme that liquefies cervical mucus are not identical but present certain parallelisms. The addition of the enzyme papain to hyaluronidase may be of distinct value in patients with nonspecific endocervicitis. Sexual abstinence for a limited period (average about two weeks) does not increase the hyaluronidase content of semen.

American Journal of Hygiene, Baltimore 47:247-373 (May) 1948

Studies on Use of DDT and Phenyl Cellosolve for Control of Pediculosis in Villages in Colombia. J. A. Montoya and P. P. Osejo.—p. 247.

Studies on Schistosomiasis Dermatitis: X. Distribution and Epidemiology in Michigan. D. B. McMullen and S. Brackett.—p. 259.

Appraisal of Techniques Employed for Detection of Subclinical (Inapparent) Meningococcal Infections. E. B. Schoenbach and J. J. Phair.—p. 271.

Resistance Induced in Chickens by Infections with Nematode, Ascaridia Gallii. E. H. Sadun.—p. 282.

*Endemic Influenza. H. Dingle and others of the Commission on Acute Respiratory Diseases of the Office of the Surgeon General of the United States Army.—p. 290.

*Influenza B: Study of Localized Outbreak Preceding the 1945 Epidemic. H. Dingle and others of the Commission on Acute Respiratory Diseases of the Office of the Surgeon General of the United States Army.—p. 297.

Home Range of Brazilian Cebus Monkeys in Region of Small Residual Forests. O. R. Causey, H. W. Laemmert Jr. and G. S. Hayes.—p. 304.

Reproduction of "3T" Strain of Plasmodium Cathemerium in White Pekin Ducks. M. L. Simpson.—p. 315.

Neutralization of Mouse-Adapted Poliomyelitis Virus by Serums of Patients, Family Contacts, and Normal Children in Los Angeles. C. F. Pait, J. F. Kessel and P. Grossman.—p. 335.

Studies on Growth Requirements of Endamoeba Histolytica: III. Growth and Multiplication of Two Strains of E. Histolytica in Transparent Medium Without Addition of Rice Flour or Other Particulate Matter and Without Demonstrable Bacterial Growth. J. G. Shaffer, F. W. Ryden and W. W. Frye.—p. 345.

Relationship Between the Antipoliomyelitic Properties of Human Nasopharyngeal Secretions and Blood Serums. E. J. Bell.—p. 351.

Endemic Influenza.—Dingle and his associates of the Commission on Acute Respiratory Diseases of the Office of the Surgeon General of the United States Army point out that a possible explanation for the persistence of virus from epidemic to epidemic implies that cases of influenza would be found

repeatedly in a large population in nonepidemic periods if an intensive search were made. The results of such a search for cases of influenza in the flow of military population through a large army post over a period of nearly three and one-half years is the subject of this report. A search for cases of influenza has been carried out at Fort Bragg, N. C., for a continuous period of forty-one months (November 1942 through March 1946) by serologic examination of sets of serums from 2,932 patients admitted to the respiratory disease wards of the station hospital. During this period, both influenza A and influenza B occurred sporadically as well as in epidemic form. Cases of sporadic influenza were difficult to recognize clinically. The conclusion was reached that influenza A and influenza B may be viewed as endemic diseases which periodically erupt in epidemic form. This concept explains the persistence of influenza virus from epidemic to epidemic on the basis of case to case transfer.

Localized Outbreak of Influenza B Preceding Epidemic of 1945.—Dingle and other members of the Commission on Acute Respiratory Diseases describe a localized outbreak of influenza B which occurred in a battery of 230 recruits at Fort Bragg, N. C., late in the summer of 1945. "Recognized" and "inapparent" influenza B infections occurred in approximately equal numbers in the population. The "recognized" infections occurred principally during three weeks in September 1945, nearly two months before the widespread epidemic of influenza B. More than half of the total infections, as determined serologically, were concentrated in one of the four platoons comprising the battery. The persons in the population who had the lower initial antibody titers were predominantly the ones who subsequently contracted a febrile respiratory illness and had the largest increases in antibody titer.

Anesthesiology, New York

9:229-344 (May) 1948

- *Use of Prolonged Continuous Spinal Anesthesia to Relieve Vasospasm and Pain in Peripheral Embolism. S. M. Smith and V. L. Rees.—p. 229.
- Impressions of Centenary Celebrations of Anesthesia in Great Britain. W. Bourne.—p. 239.
- Eserine and Neostigmine Antagonism to D-Tubocurarine. J. C. Burke, C. R. Linegar, Muriel N. Frank and A. R. McIntyre.—p. 251.
- *Regulation of Blood Pressure During Spinal Anesthesia: Observations on Intramuscular Pressure and Skin Temperature. H. Milwidsky and A. de Vries.—p. 258.
- Analgesic and Hypnotic Actions of Barbiturates. E. R. Hart and O. M. Weaver Jr.—p. 276.
- Pontocaine Hydrochloride for Brachial Block Analgesia: One Hundred and Fifty Cases. D. C. Moore.—p. 281.
- Use of Demerol in Patients Sensitive to Morphine. B. G. Narodick and J. D. Steele.—p. 285.
- Continuous Spinal Anesthesia: Modification of Ureteral Catheter Technique. J. E. Cann and C. C. Wycoff.—p. 288.
- *Antenatal Selection of Donors for Exchange Transfusion in Erythroblastosis. A. S. Wiener and I. B. Wexler.—p. 296.
- Anesthesia for Plastic Surgery of Face. W. M. Shaw.—p. 303.

Spinal Anesthesia in Peripheral Embolism.—Smith and Rees report 6 cases of lower extremity embolism. In three cases embolectomy was performed and each of these patients received prolonged continuous spinal anesthesia lasting from twenty-six to sixty-nine hours. The remaining 3 patients received a single injection of spinal anesthetic, and in 2 of these it was the only therapy necessary. In the other case the leg was not viable at the time the spinal anesthetic was administered and amputation had to be done. Spinal anesthesia not only relieves vasospasm but also gives complete relief of the severe pain that accompanies this condition. No neurologic changes were noted in the cases in which prolonged continuous spinal anesthesia was employed. It was noticed, however, that the relative duration and effectiveness of the anesthetic agent became progressively less, and in 2 of the 3 cases two agents were used to prolong the anesthesia to sixty-nine hours and forty-three hours, respectively. A total of 4,450 mg. of procaine was used in 1 case over a forty-four hour period. Single injection anesthesia and prolonged continuous spinal anesthesia are valuable aids in the treatment of peripheral embolism. In some instances, surgical removal of the embolus may not be necessary when adequate block of the sympathetic nerves to the involved extremity is maintained.

Blood Pressure During Spinal Anesthesia.—Milwidsky and de Vries measured the intramuscular pressure in the lower and upper extremities of 11 patients under spinal anesthesia to investigate the possible correlation between skeletal muscle tone and fall in blood pressure during spinal anesthesia. Skin temperature measurements were performed in the lower and upper extremities of 21 patients under spinal anesthesia to ascertain the role of vasodilatation in producing hypotension and of compensatory vasoconstriction in preventing it during spinal anesthesia. They found that arteriolar dilatation resulting from vasoconstrictor paralysis in the anesthetized part of the body is the principal cause of the fall of blood pressure during spinal anesthesia. Compensatory vasoconstriction occurs in the area not under the effect of the anesthetic agent. The ratio between the area of vasodilatation and that of compensatory vasoconstriction determines the degree of blood pressure drop in spinal anesthesia. In high spinal anesthesia the majority of vasoconstrictor fibers, including those supplying the upper extremities (fourth to eighth thoracic), are blocked, and hypotension ensues. In low spinal anesthesia a sufficient number of vasoconstrictor fibers are left intact to prevent a major drop in blood pressure.

Antenatal Selection of Donors.—Wiener and Wexler discuss the rationale of exchange transfusion treatment for erythroblastosis. Since the treatment must be carried out as soon after birth as possible, means that would shorten the time between the birth of the child and the institution of treatment are of value. In many instances the group of blood that will be compatible with that of the infant can be predicted if the groups to which the mother and the father belong are known. These are tabulated. A table is also given listing those instances in which the infant's group must be determined before a compatible donor can be selected. A case is presented illustrating the selection of a donor for an exchange transfusion before the birth of the infant. The mother belonged to group AB and the father to group A and an Rh-negative donor belonging to group AB was chosen. The infant later proved to belong to group B. Nevertheless, the donor's blood survived in the infant's circulation for more than two months, a survival time that compares favorably with that obtained when blood of the homologous group is used.

Canadian Medical Association Journal, Montreal

58:537-646 (June) 1948

- Uses of Streptomycin in Urology. J. T. MacLean, E. Smith, L. Bower and F. Smith.—p. 537.
- Deputyren's Contracture. S. Gordon.—p. 543.
- Relationship Between Impairment of Liver Function and Premature Development of Arteriosclerosis in Diabetes Mellitus. I. M. Rabinowitch.—p. 547.
- Nutrition in Pregnancy. H. Simonnet.—p. 556.
- Surgical Management of Chronic Duodenal Ulcer with Special Reference to Role of Vagotomy. P. H. T. Thorlakson.—p. 561.
- *Osteoid Osteoma. J. E. Pritchard and J. W. McKay.—p. 567.
- *BCG Vaccine in Prevention of Tuberculosis. B. McKone.—p. 575.
- Infectious Polyneuritis of Unknown Etiology (Guillain-Barre Syndrome) in Childhood. Valerie Friedman.—p. 577.
- Strictures of Common Duct. W. H. Cole.—p. 582.
- Role of Surgery in Myasthenia Gravis. W. C. Whiteside and C. Weder.—p. 588.
- Subtalar Dislocation of Foot. A. Gibson and W. B. McKinnon.—p. 593.
- Insulin Resistance in Diabetes Complicated by Hyperthyroidism. W. de M. Scriven.—p. 596.

Osteoid Osteoma.—Pritchard and McKay agree with Jaffe that osteoid osteoma is a distinct entity and a tumor. It has often been mistaken for other conditions, such as chronic osteomyelitis, cortical abscess, bone abscess with sequestrum, Brodie's abscess, sclerosing osteitis, osteochondritis dissecans, tuberculosis, bone cyst and even sarcoma, with the result that it sometimes has been improperly treated even to the extent of unnecessarily extensive resections or amputations. It is important, therefore, that it be recognized for the benign tumor that it is, and to know that it can be cured promptly and easily by complete local removal. The authors have encountered 19 of these tumors in the last eighteen years; 8 are recorded in the files of the Montreal General Hospital; 6 were observed by pathologist colleagues in Montreal, and sections of 2 and roentgenograms of 3 were sent from outside sources for an opinion. Of these 19 cases, 15 are selected for this report. Surgical removal of the tumor gave prompt relief from symptoms and a lasting cure in 11 cases. In 8 of these the tumor was removed with the

chisel and curet. Two amputations and one resection done under mistaken diagnoses also gave prompt and lasting cures. A patient in whom symptoms were slight has been advised against operation and has improved under treatment by active exercises. The outcome of this last case will be watched with interest. Judging by the behavior of other cases, the authors suspect that the return and increase of symptoms might necessitate the removal of the tumor. Speculating on the fate of these tumors if left untreated, the authors suggest that it is not inconceivable that the ossified tumor might fuse with the surrounding condensed bone, accounting for some of those foci of osteopetrosis accidentally found in the bones on radiologic examination.

BCG in Prevention of Tuberculosis.—McKone reviews the history of BCG vaccine and discusses the reactions which follow its employment in animals and human subjects. The author's method was the intradermal injection, which he regards as the most simple method; the scarification method seems to be the most widely employed one. BCG vaccine is innocuous and is of definite value in the prevention of tuberculosis. It is recommended for use among those negative reactors destined to live or work in a tuberculous or potentially tuberculous environment. Infants and children whose parents or other members of the family are stricken with the disease, young women planning or already training as nurses and any group working in a sanatorium environment are among those recommended for vaccination.

Hawaii Medical Journal, Honolulu

7:363-444 (May-June) 1948

- Torula Meningitis: First Case to be Reported in Hawaii. R. B. Cloward. —p. 377.
Some Aspects of Tuberculosis Problem in Hawaii. R. H. Marks. —p. 382.
Simple Diet Methods for Estimating Toxicity and Antibacterial Activity of New Compounds in Mice. F. W. Hartmann. —p. 385.
Management of Prolonged Labor. F. C. Spencer. —p. 389.
Evaluation of Labyrinthine Function in Diagnosis of Brain Tumor: Preliminary Report Based on Analysis of 64 Cases. P. J. Lynam. —p. 392.

Journal of Bacteriology, Baltimore

55:769-878 (June) 1948. Partial Index

- Studies of Staphylococci with Special Reference to Coagulase-Positive Types. J. B. Evans. —p. 793.
Staphylococcal Penicillinase: Characteristics of Enzyme and Its Distribution. Betty St. C. Gilson and R. F. Parker. —p. 801.
Studies with Electron Microscope on Interaction of Red Cells and Influenza Virus. F. Heinmets. —p. 823.
Effect of Sulfathiazole on Rate of Increase of Riboflavin Production by *Proteus Vulgaris* and *Bacillus Subtilis*. R. E. Crandall. —p. 833.
Three New Species of Genus *Clostridium*. R. S. Spray. —p. 839.
Susceptibility of Penicillinase-Producing Bacteria to Penicillin. A. Bondi Jr. and Catherine C. Dietz. —p. 843.
Effects of Extract of Blood Cells on Cultivation of Bacterium *Tularensis* in Liquid Media. I. W. Gibby, P. S. Nicholes, J. T. Tamura and L. Foshay. —p. 855.

Journal-Lancet, Minneapolis

68:217-256 (June) 1948

- *Incidence and Significance of Molds in Allergic Respiratory Symptoms. W. S. Eisenstadt. —p. 217.
*Report of 26 Cases of Erythroblastosis Fetalis and Survey of Literature. W. R. Heilig, R. B. Tudor, T. Smith and E. S. Platon. —p. 222.
Heart in Athlete: I. Comparison of Actual and Predicted Cardiac and Aortic Measurements—Analysis of Measurements of Cardiac and Supracardiac Shadows. J. B. Wolfe, V. A. Digilio, M. Schumann and others. —p. 228.
Thrombophlebitis and Phlebothrombosis. E. C. Henrikson, L. G. Idstrom and R. S. Rodgers. —p. 233.
Student Health Service in Postwar Era. H. D. Lees. —p. 238.
Experiences in Topical Use of Pyribenzamine. R. E. Carrier, E. S. Krug and H. R. Glenn. —p. 240.
Hypothyroidism: Clinical Study on Students and Personnel at Kansas University. R. A. Jordan and R. I. Canuteson. —p. 241.
Duration of Certain Phases of Sound in Blood Pressure Determination by Auscultatory Method. Ramona L. Todd. —p. 246.

Molds in Allergic Respiratory Symptoms.—Eisenstadt tested 380 patients who had clinical respiratory allergy with mold extracts; 129 (34 per cent) revealed positive cutaneous reactions to molds. Molds were clinically significant in 111 (29 per cent) of all patients tested. In 42 patients molds were the primary allergen causing symptoms; in 69 patients molds acted as a contributory cause and in 18 patients the cutaneous reactions were of no clinical significance. The age of patients who manifested sensitivity to molds ranged from 2 to 64 years. One hundred and sixteen (90 per cent) were in the 2 to 40 year

age group; 78 (61 per cent) were in the 11 to 30 year span. *Alternaria* and *Hormodendron* were shown to be of major importance, both in relation to abundance of spores and frequency of cutaneous reactions. Other molds have been shown to be clinically significant. Mold extracts should be included in the routine testing of patients with allergic respiratory symptoms.

Erythroblastosis Fetalis.—Heilig and his co-workers report 26 infants with erythroblastosis fetal, 20 of whom were jaundiced clinically within twenty-four hours after delivery. Twenty of the infants survived. Three infants received Rh-positive whole blood transfusions only; 11 infants received Rh-positive whole blood, Rh-negative whole blood and Rh-negative washed red blood cell transfusions. Twelve infants were given exchange transfusions of Rh-negative whole blood. Results showed that abandoning the use of Rh-positive blood transfusions improved the morbidity and mortality. While in some instances infants given Rh-positive blood survived, the majority of them did better with Rh-negative blood. While many infants with erythroblastosis do not require exchange transfusion, a selected group with severe maternal histories and early jaundice were strikingly improved by this procedure, whereas very similar cases treated by periodic transfusions resulted fatally.

Journal of the Mount Sinai Hospital, New York

15:1-54 (May-June) 1948

- Clinical Review of Diverticulitis of Colon: Report of 108 Cases. A. M. Sabeti. —p. 1.
"Two-Step" and "Anoxemia" Tests: Case Report of Patient with Coronary Artery Disease and Normal Electrocardiogram. A. M. Master, H. J. Weintraub and M. M. Gertler. —p. 21.
Cerebral Air Embolism Complicating Stellate Ganglion Block. M. H. Adelman. —p. 28.
Mechanism of Structural Scoliosis: Preliminary Report. A. Arkin. —p. 31.
Observations on Effect of Hyaluronidase on Urinary Calculi. L. Narins, N. Simon and G. D. Oppenheimer. —p. 33.
Essays on Biology of Disease. Uremia. E. Moschowitz. —p. 38.

Journal of Urology, Baltimore

59:981-1264 (June) 1948. Partial Index

- *Renal Infarction: Clinical and Possible Surgical Entity. F. C. Regan and E. G. Crabtree. —p. 981.
Adenocarcinoma and Tuberculosis of Same Kidney: Review of Literature and Report of 7 Cases. H. A. Neibling and W. Walters. —p. 1022.
*Surgical Aspects of Bilateral Familial Pheochromocytoma. J. A. C. Colston. —p. 1036.
Somatic Pain Due to Fibrolipomatous Nodules, Simulating Uretero-Renal Disease: Preliminary Report. L. M. Orr, F. Mathers and T. C. Butt. —p. 1061.
Bilateral Ureteral Obstruction Due to Envelopment and Compression by Inflammatory Retroperitoneal Process. J. K. Ormond. —p. 1072.
Ectopic Insertion of Ureter as Cause of Urinary Dribbling: Complete Cure by Heminephrectomy. F. L. Senger, J. J. Bottone and W. F. Ittner. —p. 1080.
Report of 2 Cases of Carcinoma of Ureter: Discussion of Pathogenesis of Urinary Tract Tumors. T. Gualtieri, J. J. Hayes and A. D. Segal. —p. 1083.
Tunnel Technique of Uretero-Intestinal Anastomosis: Experimental Study. G. Schinagel. —p. 1101.
Extrophy of Bladder with Pyelographic Follow-Up. O. J. Wilhelmi. —p. 1108.
Carcinoma and Sarcoma of Bladder: Report of Unusual Simultaneous Occurrence of Both Tumors. A. Mackles, S. Immergut, D. M. Grayzel and Z. R. Cottler. —p. 1121.
Carcinoma Within Diverticulum of Bladder. C. K. Pearlman and R. M. Bobbitt. —p. 1127.
Cystometry, and Treatment of Vesical Dysfunction in Paraplegia. H. S. Tallot. —p. 1130.
Agnesia of Urinary Bladder and Urethra. H. L. Miller. —p. 1156.
New Method for Construction of Glandular Urethra in Hypospadias Repair. H. Brendler. —p. 1164.
Construction of Terminal Urethra in Correction of Hypospadias. J. H. Kiefer. —p. 1169.
Plastic Reconstruction of Penis. R. T. Bergman, A. H. Howard and R. W. Barnes. —p. 1174.
Neurofibroma of Tunica Albuginea Testis. B. Levant and M. A. Chatlin. —p. 1187.
Bilateral Congenital Absence of Vasa Deferentia: Case Report. J. G. Keshin and B. D. Pinck. —p. 1190.
Quantitative Determinations of Acid Phosphatase in Prostate Under Various Normal and Pathologic Conditions: Preliminary Report. J. Fischmann, H. A. Chamberlin, R. Cubiles and G. Schmidt. —p. 1194.

Renal Infarction.—Regan and Crabtree discuss experimental and clinical observations on various types of renal infarction and their immediate and remote effects on the anatomy and physiology of the kidney. Diagnosis may be suspected by the internist, confirmed by the pathologist after death, but the

clinical diagnosis rests with the urologist if proper management in the living is to be made. Arterial, venous and traumatic infarction of the kidney are diagnostic and surgical entities encountered with some frequency. An analysis of reported cases indicates certain characteristics of each form of infarction from which diagnosis may be made. Sterile arterial infarction is most common of the three types. It seldom, if ever, requires surgical intervention, but operation is frequently done for sterile infarct, through mistaken diagnosis. Septic arterial infarction is rare. Surgical treatment is indicated. Chronic infarction tends to undergo cystic degeneration occasionally. Arterial infarction is closely associated with cardiac disease. Venous infarction is a serious condition. Its close association in origin with septic states, and the almost invariably infected clots, make surgical intervention imperative when the infarction is unilateral. Venous infarctions frequently, and arterial infarctions occasionally, are accompanied by large subcapsular or perarenal hematomas. Even in the absence of hematoma the kidney is enlarged. Traumatic infarction forms but a small portion of the reported cases. It is dependent on direct injury to the vessels. The most important single time in diagnosis of acute infarction of the kidney is complete, or almost complete, loss of function, almost irrespective of the degree of tissue involvement, in kidneys in which results of pyelographic studies remain unchanged. Chronic infarction is recognizable in proportion to the caliceal atrophy which results from the infarct in its scar stage. Clinical studies of infarcted kidneys parallel closely established experimental work.

Bilateral Familial Pheochromocytoma.—Colston reports 2 cases of bilateral pheochromocytomas which occurred in blood relations. The first was a woman, aged 22, who entered Johns Hopkins Hospital in April 1946 complaining of recurrence of symptoms which had been relieved for a nine months' period by an operation performed four years previously at another hospital. Owing to technical difficulties, it was necessary to leave behind a portion of the capsule. A recurrent tumor apparently developed from this portion of the capsule, and was successfully removed by operation. The hypertensive crises persisted with a positive reaction to a histamine test four months later. A second pheochromocytoma was exposed at operation on the opposite side and was successfully removed. The patient's maternal aunt had been operated on elsewhere nine years previously, and a pheochromocytoma, the entire adrenal gland and the left kidney removed. She was relieved of symptoms for nine months, but the hypertensive crises recurred. A diagnosis of pheochromocytoma on the opposite side was made, and at operation a large tumor was exposed and successfully removed. The first patient has now been well for seventeen months, has had no further hypertensive crises, and reactions to the histamine test are negative, so that as of to date it might be concluded that no further excess of physiologically active chromaffin tissue is present. Case 2 reports that she has been well and has had no return of hypertensive crises for sixteen months. The patient has recently been through a normal pregnancy with delivery of a normal child, and reports that her blood pressure has not been above 115 systolic and 80 diastolic. The author emphasizes the value of the histamine test and discusses the technical difficulties at operation. He suggests that the exposure of both adrenal areas might be more satisfactorily carried out through a transverse incision in the upper part of the abdomen. The advantages of such an approach are obvious, provided that sufficient exposure can be obtained to remove a tumor if one should be encountered.

Maine Medical Association Journal, Portland

39:79-118 (April) 1948

- Life and Crimes of Jesse Harding Pomeroy. A. W. Stearns.—p. 79.
End Results in One Hundred Cases of Cholecystectomy. R. T. Munce.—p. 93.
Concerning Hearing Aids. J. E. Whitworth.—p. 96.
Intestinal Obstruction. R. H. Delafield.—p. 98.

39:119-140 (May) 1948

- Venous Hum. C. Stetson and R. Martin.—p. 119.
Encephalomyelitis Following Influenza Immunization: Case Report. A. J. Pesiri and F. S. Broggi.—p. 121.
Debunking Public Relations. R. W. Waterson.—p. 123.

Medicine, Baltimore

27:139-242 (May) 1948

- *Aortic Stenosis: Study of Clinical and Pathologic Aspects of 107 Proved Cases. C. W. Kumpe and W. B. Bean.—p. 139.
Pathogenesis of Splenomegaly in Hypertension of Portal Circulation: "Congestive Splenomegaly." E. Moschcowitz.—p. 187.
Improved Clinical Method for Estimation of Disturbances of Acid-Base Balance of Human Blood. R. B. Singer and A. B. Hastings.—p. 223.

Aortic Stenosis.—The fact that in their medical wards 2 patients died in one week with advanced calcified stenosis of the aortic valve prompted Kumpe and Bean to investigate this condition. They studied the clinical and morphologic aspects of 107 proved cases of aortic stenosis, uncomplicated by deforming lesions of other valves. Three fourths of the patients were males. A history of acute rheumatic fever was obtained in two thirds of the cases. The authors differentiate between "cardiac" as group I cases and "noncardiac" as group II cases. Group II patients were admitted for infection (endocarditis) and various diseases of old age. Pulse rate was accelerated, but not to extreme degrees, averaging 96 for cardiac patients. Enlargement of the heart was detected clinically in 78 per cent of the patients with cardiac disease and 52 per cent of the others. Muffling of the apical sounds was common. A systolic murmur was heard at the base in 83 per cent of the cases, with transmissions into the neck vessels in slightly less than half. Apical systolic murmurs were heard in 82 per cent of the cases and an apical diastolic murmur was noted in slightly less than one third. Manifestations of congestive heart failure were commonplace but were not of a peculiar variety except for an unusual frequency of sweating. Studies of blood and urine were not helpful, and the electrocardiogram failed to show pathognomonic signs. The course was characterized by signs of congestive failure, which proved rather refractory to digitalis, oxygen or diuretics. Treatment was unsatisfactory. Calcium was found in every valve, and it varied in quantity with the severity of the lesion. In severe lesions the coronary ostia were distorted. Fusion of cusps and nodule formation were common. The hearts were enlarged in the majority of cases and the weight of the heart was related to the valvular obstruction. Coronary arteriosclerosis was common and had given rise to thrombosis and myocardial infarction in a considerable number. Sclerosis was extensive in the abdominal and descending portion of the thoracic aorta. The remainder of the lesions found at necropsy were related to advanced arterial diseases which proved lethal to those in group II. Clinical diagnosis was made in only 24 per cent of all cases, reflecting both unfamiliarity with the diagnostic criteria and too great acceptance of the classic triad of basal systolic murmur, thrill and small, slowly rising pulse.

New England Journal of Medicine, Boston

238:787-820 (June 3) 1948

- *Temporary Remissions in Acute Leukemia in Children Produced by Folic Acid Antagonist, 4-Aminopteroyl-Glutamic Acid (Aminopterin). S. Farber, L. K. Diamond, R. D. Mercer, R. F. Sylvester Jr. and J. A. Wolff.—p. 787.
*Sarcoma of Uterus: Report of 18 Cases. T. Perry Jr.—p. 793.
Pondville State Cancer Hospital, 1927-1947. G. L. Parker.—p. 800.
Unusual Reaction to Penicillin in Oil and Wax. C. E. Burt and S. M. Caplan.—p. 804.
Pilonidal Cyst and Sinus. J. Liburt.—p. 806.
Adenocarcinoma of Pancreas, with Metastases to Liver, Lungs, Left Adrenal Gland and Serous Surfaces.—p. 809.
Cavernous Hemangioma of Head of Gastrocnemius Muscle.—p. 812.

Remissions in Leukemia Produced by 4-Aminopteroyl-Glutamic Acid.—The occurrence of what he interpreted as an "acceleration phenomenon" in the leukemic process as seen in the marrow and viscera of children with acute leukemia treated by the injection of folic acid conjugates—pteroyltriglutamic acid ("teropterin") and pteroyldiglutamic acid ("dioppterin")—and an experience gained from studies on folic acid deficiency suggested to Farber that folic acid antagonists might be of value in the treatment of patients with acute leukemia. Farber and his associates record the results of clinical and hematologic studies on 5 children with acute leukemia treated by the intramuscular injection of a synthetic compound, 4-aminopteroylglutamic acid ("aminopterin"). This substance is an antagonist to folic acid regarding the growth of *Streptococcus faecalis* R. The authors emphasize that these remissions are temporary in character and that the substance is toxic and may be productive of even

the third chapter Dr. Menninger discusses the relationship of the individual to the social order under such headings as the family, the community, educational facilities and industry, and the role of psychiatry in such phases of the social order as criminology, penology, public health and leadership.

The cataclysmic effects of the last world war on prices, wages, taxes, shortages and national and international policies is discussed and an attempt is made to formulate the relationships between the actual and potential contributions of psychiatry to our present social order. The need for a pooling of the experience of experts in all walks of life, including psychiatry, psychology, sociology and anthropology, toward a solution of our major social problems is mentioned. The potential contribution of the psychiatrist is stated to be to point out not only the psychopathology of everyday life but also some of the factors that cause it and some of the factors that might tend to correct it.

Headache and Other Head Pain. By Harold G. Wolff, M.D., Professor of Medicine (Neurology) and Associate Professor of Psychiatry, Cornell University Medical College, New York. Cloth. Price, \$12. Pp. 642, with 154 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1948.

This is a very practical book. The author is an indefatigable physician who is not only a good clinician but is a research man with excellent and honest critique. This work is monumental and was started fifteen years ago when the author was in the midst of studying observations incidental to cerebral circulation. The book contains 629 pages and 154 illustrations. It is written clearly and simply and discusses all forms of headache as well as neuralgias. This work will reveal that the cortex and, indeed, the nerve cells of the brain are not primarily involved in the production of headache but that on the contrary the symptom is likely to arise from fatigued or irritated muscles, from dilated blood vessels, from inflamed meninges, from stretched dura or distorted venous sinuses. Every physician will find answers to many of his problems encountered in his daily practice. There is an excellent bibliography after each chapter.

The Care of the Teeth, Pre-Natal and in Infancy: A Handbook for Mothers and Expectant Mothers. By G. Herbert H. Russell, M.B., Ch.B., L.D.S. Fabrikoid. Price, 2s. Pp. 48. John Sherratt & Son, Park Road, Timperley, Altrincham, Cheshire, 1948.

This 48 page book is composed of eight chapters in all. Part I, chapters I to III, belongs to the expectant mother, and part II, chapters I to V, is assigned to the child, but the chapters are without captions, and there are no references, bibliography or tables. The author gives his view as to care of the teeth. Some points are well worth heeding; especially one might refer to the proper care of the tooth brush, the selection of a toothpaste or powder which the child prefers or will accept, and also the emphasis which he places on the need for restricting foods of any kind after the teeth have been cleaned in the evening before the child retires. The author states as a subtitle that this handbook is for mothers and expectant mothers. It certainly is not directed to the medical profession. Some of the recommendations on gum massage and pressure might be controversial. Even so, the book should be of value to the lay reader.

Handbook of Practical Bacteriology: A Guide to Bacteriological Laboratory Work. By T. J. Mackie, C.B.E., M.D., LL.D., Professor of Bacteriology, University of Edinburgh, Edinburgh, and J. E. McCartney, M.D., D.Sc., Director of Research and Pathological Services, London County Council, London. Eighth edition. Cloth. Price, \$7. Pp. 624, with illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1948.

The eighth edition of this book has been completely revised, taking into account recent developments in bacteriologic knowledge and technic. The subject matter which formed 42 pages in the appendix of the last edition, published during the War, has now been incorporated into appropriate chapters.

The old nomenclature has been retained, although when a name is first mentioned the new names are listed in parentheses. The tendency throughout the book is to reflect the concepts of the bacteriologists of the British Isles; for example, air, water and milk examinations are in accordance with their standards.

This book contains an enormous amount of good practical information for the laboratory worker as well as the clinician.

Gynaecological and Obstetrical Anatomy. By C. F. V. Smout, M.D., M.R.C.S., Assistant Professor, Department of Anatomy, Sub-Dean and Tutor, Faculty of Medicine, University of Birmingham. With chapters on The Histology of the Female Reproductive Tract and Its Endocrine Control, By F. Jacoby, M.D., Ph.D. Second edition. Cloth. Price, \$11. Pp. 248, with 185 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1948.

The title of the first edition of this book was "The Anatomy of the Female Pelvis," but the book covers much more than this title indicates, including the subject of the placenta and the anatomy of the fetus. There is also a chapter on endocrinology which takes up one-tenth of the entire book and which is apparently considered to be anatomy. Four full pages of references are listed in the chapter on endocrinology. Most of the illustrations are highly instructive. A large number of the illustrations are in color and most of these are original. At least two colored plates are reproduced twice (figure 59 opposite page 66 is the same as figure 154 opposite page 201, and figure 62 opposite page 70 is identical with figure 104 opposite page 142). The roentgenogram shown in figure 14 was poorly reproduced. Aside from the three subjects mentioned the subjects covered in the book are the bony pelvis; the pelvic ligaments and joints; the pelvic connective tissue and fascia; the development, histology and endocrine function of the ovary; the anatomy and histology of the uterine tube; the development, anatomy and histology of the uterus and vagina; the genitourinary and alimentary tracts within the pelvis, the external genitalia; the perineum; the pelvic lymphatic system, and the innervation of the pelvic viscera. The price of the book is unusually high (\$11) in view of the fact that the book contains only 248 pages and only 185 illustrations and that most of the contents can be found in the leading textbooks on obstetrics and gynecology. However, the appearance of this edition indicates that apparently the book is popular and fulfils a definite need.

Ilustraciones obstetricas. Por los Doctores Gerardo Will y Oscar Agüero, médico-parto, adjunto del Servicio No. 2 de la Casa Municipal de Maternidad "Concepción Palacios." Caracas. Prólogo por el Doctor Leopoldo Agüerevere, profesor de clínica obstétrica de la Universidad central de Venezuela. Paper. 31 plates with explanatory matter. Casa municipal de Maternidad "Concepción Palacios," Caracas, 1946.

This series of obstetric illustrations consists of only 23 photographs and for this reason the authors purposely avoided the use of the term "atlas." The photographs were made from cases observed at the "Concepción Palacio" maternity hospital, where more than 6,000 women are delivered each year. The illustrations represent a variety of abnormalities; twelve depict congenital disturbances and anomalies in the newborn. The maternal conditions shown are a normal pregnant uterus, perforation of the uterus, rupture of the uterus, purulent endometritis, tubal pregnancy, abdominal pregnancy, placenta previa with twins, rupture of the hepatic capsule in a case of toxemia, papilloma of the vulva, Werlhof's disease in pregnancy and hydatid mole. The illustrations are clear and instructive and form a useful collection for any one interested in obstetrics.

Introduction to Medical Psychology. By L. Erwin Wexberg, M.D., Director, Bureau of Mental Hygiene, District of Columbia. Cloth. Price, \$3.50. Pp. 171. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1947.

In this 162 page book the author has given a concise and accurate review, in both theory and practice of medical psychology, for the beginner and even for some presumably more advanced students. There is an excellent bibliography and a good index. This book is highly recommended as a textbook, particularly for beginners in the field.

Standard Radiographic Positions. By Nancy Davies, M.S.R., C.T., Senior Radiographer, Malvern General Hospital, Malvern, London, and Ursel Isenburg, M.S.R., Radiographer, Royal Free Hospital, London. Second edition. Cloth. Price, \$6. Pp. 223, with 384 illustrations. Williams & Wilkins Co., Mount Royal and Guilford Aves., Baltimore 2, 1948.

This is a rather elementary text, but it should serve well for the earlier stages of instruction of radiologic technicians. The text is brief but clear. The illustrations, mostly line drawings, are clear. The text seems peculiarly fitted for classes of instruction on radiologic technic and to serve as a guide for the occasional radiographer. A good exposure chart accompanies the text.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE ANSWERED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THIS WILL BE OMITTED ON REQUEST.

PROTECTION FROM SYPHILIS IN SURGERY

To the Editor:—How long are spirochetes found in the circulating blood in untreated syphilis: (a) after a primary chancre; (b) in an older person with positive Wassermann reaction but no demonstrable lesion of syphilis; (c) in operating on a patient with a positive Wassermann reaction, what is the minimum treatment needed so that the surgical staff will be protected in case of a punctured finger by a needle?

M. A. Shillington, M.D., Glendive, Mont

ANSWER.—(a) and (b). It is difficult to answer these questions in terms of exact time and dosage. In general, the blood is not a suitable medium for the growth of syphilitic organisms, and probably they leave it as soon as possible for the more favorable environment of other tissues, particularly those of ectodermal origin. Animal experimentation—and an occasional unfortunate experience with a blood transfusion in human beings—indicates that spirochetes may be harbored in the blood for a period beginning shortly after inoculation (before the appearance of the chancre) and extending through the stage of secondary eruption. Sometimes after the spontaneous healing of the secondary eruption, there may be a series of recurring lesions, especially on the mucous membranes of the mouth or genitalia. These relapsing lesions contain organisms in large numbers, and it is likely that during these periods organisms may be distributed in the blood stream. In some patients, however, such recurrent lesions may never appear, and in most they cease to recur by the time three to five years have elapsed. There have been rare instances, however, of such lesions appearing even after two decades of latency. Stokes suggests that the infection of the child in utero in the mother with a latent syphilitic infection of years' standing is also conceivably explainable through a transient spirochetemia associated with the revival of a visceral latent focus. Fruhwald has succeeded where most others have failed in demonstrating the infectiousness of blood from persons with latent syphilis. Yet there is the report of McNamara, who by circumstances was forced to use the blood of 6 persons with late syphilis in nineteen transfusions for 10 recipients in whom he was unable to demonstrate a single transfer of syphilis. It would seem, therefore, that in an older person with latent or late syphilis, it is unlikely that organisms are present in the blood stream.

(c) The older the infection the less risk to the surgeon, and after five years the risk of infection via needleprick is practically nil. The chance of infection is greater during the first two years of the disease and lessens with time. Even during the early period infections from needleprick are exceedingly rare and should be a source of worry only if the surgery is of an emergency character. Otherwise two or three injections of an arsenical drug administered to the patient forty-eight to seventy-two hours preoperatively will usually suffice to protect the surgeon. If penicillin is used, a total of 2,400,000 units should be administered over a period of four days.

WAR GAS DFP IN GLAUCOMA

To the Editor:—Discuss use of war gas in the treatment of glaucoma.

Serge Tolstoi, M.D., Paris, France.

ANSWER.—Diisopropyl fluorophosphate (DFP) was originally synthesized as a war gas; its marked miotic action prompted investigation of its efficacy in glaucoma. It acts by inactivation of cholinesterase and is capable of producing prolonged and decided parasympathomimetic effects in the eye. Clinically 0.05 to 0.2 per cent solutions in peanut oil are suitable for reducing tension in some cases of chronic glaucoma simplex. In general, when other miotics, as pilocarpine or physostigmine, fail to control the tension DFP has little chance of success. Its chief advantages, when it satisfactorily controls tension, are infrequency of administration and absence of a local sensitivity reaction. Complications of DFP therapy are a severe eye or brow ache, blurring of vision caused by a variable ciliary spasm, pericorneal infection and occasionally an increase rather than decrease of intraocular pressure.

TOXIC VAPORS

To the Editor:—Please give me information concerning the toxicity of and symptoms resulting from the following substances "freon," methyl chloride and "mineral spirits." These in vapor form are the only apparent agents which might be responsible for my patient's apparent toxicity. She states that rather large volumes of methyl chloride blow into her face at work.

M.D., Wisconsin.

ANSWER.—Freon is dichlorodifluoromethane (CCl_2F_2). Although this compound embraces chlorine and fluorine this fact is without significance to toxicity. Apart from representing a simple asphyxiant when it replaces oxygen in respired air, it is not known to be harmful to health. Mineral spirits is a trade rather than a chemical term applicable to one fraction in the distillation of petroleum oil. For toxicologic purposes it may be regarded as not different from naphtha of the same boiling point. Mineral spirits is a well known producer of dermatitis. Its vapors may produce the well known "naphtha jag," an acute state resembling alcoholic intoxication. Long exposure to its vapors may lead to chronic naphtha poisoning, a rare and possibly dubious entity. This condition as described resembles multiple sclerosis. Methyl chloride (CH_3Cl) falls into a higher order of toxic agent. This substance may produce either an acute or a chronic state. In the former its narcotic action dominates the clinical picture and a fair number of deaths have occurred, chiefly associated with leaks in refrigeration systems employing methyl chloride as the refrigerant. The proposed tolerable limits of exposure are 10 parts per million not exceeding a total of eight hours daily. Mild intoxication is characterized by headache, dizziness, confusion, nausea and vomiting. In more direful instances greater involvement of the nervous system, such as convulsions and later coma, may appear. The decomposition of methyl chloride may evolve formates and methyl alcohol. Chronic poisoning simulates methyl alcohol poisoning, which may be accompanied by nephritis, anuria and ocular disturbances, possibly representing optic neuritis. At autopsy petechial hemorrhages have been observed, notably of the pleura and other chest contents.

LATE CONGENITAL SYPHILIS

To the Editor:—I have under my care a 5 year old child with congenital syphilis. Physical examination including examination of eyegrounds does not reveal abnormality. The blood Wassermann reaction is 4 plus, but the spinal fluid reaction is negative. To avoid intravenous therapy I plan to alternate eight weeks of bismuth subsalicylate with four weeks of sulfarsphenamine. Both are to be administered intramuscularly for the next one and one-half years. What are other plans of therapy for this case?

M.D., Pennsylvania.

ANSWER.—The method of treatment described has been thoroughly tried and is effective. In late latent congenital syphilis the purpose of treatment will be to prevent progression in the form of gummatous breakdown of bone, liver or skin or the development of interstitial keratitis. A negative spinal fluid study at this time would insure against the development of other serious late complications of the nervous system such as nerve deafness, juvenile paresis or tabes. As little as fifteen weeks of treatment with arsenicals and appropriate heavy metal compound given to children over 2 years of age with congenital syphilis has been shown to prevent the development of interstitial keratitis in 98 per cent of cases (Cole, H. N.; Usilton, L. J.; Moore, J. E., and others: *Ven. Dis. Inform.* 18:97 [April] 1937). The possibility of causing the blood serologic reaction to revert to negative as a result of treatment is not good when commencement of therapy has been delayed to this age, certainly not better than 30 to 40 per cent.

An alternative method of intramuscular arsenical therapy which has been widely used employs bismuth arspenamine sulfonate ("bismarsen"). H. Beerman, B. Shaffer and C. Livingood have described the follow-up results with this method of treatment (Bismarsen for Treatment of Syphilis, *J. A. M. A.* 120:333 [Oct. 3] 1942). For a 5 year old child the weekly dose of this drug should be about 0.2 Gm., the injections given continuously for forty weeks followed by about ten weekly injections of bismuth subsalicylate to complete the treatment.

Since the introduction of penicillin in the treatment of syphilis, this drug has been used widely in the management of infants and children with this disease. Relatively little information is available as yet as to the value of this drug in the treatment of late latent congenital syphilis. It has been inferred that it is probably effective, however, from the fact

that the remedy has proved equal or superior to others in the symptomatic forms of the disease, such as infantile congenital syphilis with open lesions, late congenital syphilis with involvement of skin, bones or central nervous system. Penicillin has the advantage that the treatment is less toxic and less likely to produce reactions and that the course of therapy may be completed in a few days rather than prolonged over a period of weeks or months. Post-treatment observation in such a case as is under discussion should cover three to five years at least, if penicillin is used, with periodic clinical and laboratory examinations. Recommended penicillin dosage at this age would be in the same amount approximately as employed in the adult and would be in the magnitude of 40,000 Oxford units every three hours intramuscularly for one hundred and twenty injections if the crystalline G form is used in aqueous solution. This would be a total of 4,800,000 Oxford units given over a period of fifteen days. Such a method would require hospitalization. Probably equivalent dosage of penicillin in oil and wax or procaine-penicillin could be given once daily and thus on an ambulatory basis would produce results similar to those of the aqueous preparation. Even though this is being used, still less is known of the results of this therapy in such cases. It can only be considered for treatment on an experimental basis. Articles by A. W. Neilson and others (*Arch. Dermat. & Syph.* 53:625 [June] 1946) and J. Yampolsky and A. Heyman (*J. A. M. A.* 132:368 [Oct. 19] 1946) mention the treatment of late congenital syphilis with penicillin.

VASODILATORS IN PERIPHERAL VASCULAR DISEASE

To the Editor:—What is the present status of histidine plus sodium ascorbate in peripheral vascular disease?
M.D., Pennsylvania.

ANSWER.—The combination of histidine with sodium ascorbate as suggested by Wirtschafter and his associates has led to a vast amount of abuse and misdirected treatment. The following principles must be observed in evaluating any vasodilators for the treatment of peripheral vascular disease:

1. Temporary vasodilation may be accomplished by a multitude of drugs, operating through different mechanisms, but there is nothing to suggest that a few hours of vasodilatation exert any lasting benefit on obliterative vascular disease.

2. A gangrenous part is dead and nothing will revive it; waiting for demarcation simply means that the attending surgeon does not exactly know the level of circulatory efficiency. This can be determined by simple clinical methods and amputation should be undertaken at this level. Waiting for demarcation often leads to septicemia, especially in persons with diabetes.

3. When an increase in blood flow to a poorly vascularized part is desired it is far more useful to increase blood flow locally than to produce a systemic vasodilation, since this must be accomplished by a shifting of blood volume from one area to another, thus producing undesirable side reactions.

4. Regarding the specific question, the published reports are inconclusive, since bed rest, cessation of smoking and aseptic care of the lesion are potent factors of improvement. One Midwestern clinic has given the method a careful unbiased trial and concluded that its use was not to be recommended.

ROTENONE

To the Editor:—Please give information on use of rotenone (from derris root) as a spray on vegetables. People in this area are eating it to kill amebic and worm infestations. They report it more efficacious than the usual medical treatment. Please advise regarding toxicity. Where may rotenone be obtained? Homer D. Hoskins, M.D., Oceanside, Calif.

ANSWER.—Rotenone, a crystalline neutral principle, is present as the active constituent of derris root, a common plant in the South Pacific islands, and in cubé root, a South American plant. It is used by natives as a spear and arrow poison. In this country it is used as an insecticide in spraying vegetable crops; the residue left on the plants is not poisonous to birds or mammals. It is estimated that a person would have to eat 4,000 apples sprayed with derris to obtain an acutely fatal dose. The fatal dose for a 70 Kg. man has been estimated to be 4 or 5 Gm. Relatively smaller amounts, however, have produced fatty changes in the liver and pulmonary irritation in mammals as well as gastrointestinal irritation, but again it is estimated that 1 to 2 Gm. daily would be well tolerated by a man. Rotenone has been used effectively

against scabies in a 10 per cent emulsion. It is stated (Crane, D. B.: *Cornell Veterinarian* 23:15, 1933) to be effective against round worms, but ineffective against tapeworms in dogs. It would appear that no extensive studies of its use in worm infestations in human beings has been made. Rotenone may be obtained from S. B. Penick & Co., 735 W. Division St., Chicago 10, Ill.

ARTHUS PHENOMENON

To the Editor:—While in the army, I had under my care a puzzling case of angioneurotic edema. The findings of the angioneurotic edema were incidental in this case and not the primary cause of admission and were treated when they arose. My impression is that "adrenalin" is one of the useful specifics for this type of reaction; however, in this case it accentuated it and "adrenalin" alone was capable of reproducing it. I can find no discussion in the texts at hand of this type of toxic reaction to "adrenalin." Specifically, this patient after 0.1 cc. of 1:1,000 subcutaneous injection of "adrenalin" within one-half hour exhibited several irregular macular purplish red areas about the size of coins over back; chest, face and arms which increased in size with time and produced pseudopodial extensions which after about one hour demonstrated edematous areas in the center. Intense pruritus occurred. The reaction subsided in about twelve hours. Please give suggestions for diagnostic tests and treatment. Stanley M. Rubin, M.D., Yonkers, N. Y.

ANSWER.—"Adrenalin" (epinephrine) is a preparation of extract of adrenal glands marketed by the Parke-Davis Company. It contains, in addition to the glandular product, chlorobutanol and sodium bisulfite as preservatives. The unusual reaction in this case could be due to any of the three ingredients. The first step would be to substitute a synthetic epinephrine for the "adrenalin," for it has been observed that persons sensitive to the glandular product may sometimes tolerate the synthetic preparation. Then, by means of percutaneous tests, determine the presence of sensitivity first to sodium bisulfite and then to chlorobutanol, using the same concentrations that are present in "adrenalin," 1:1,000. Both urticarial reactions to "adrenalin" and local Arthus phenomenon following the injection of epinephrine, although rare, have been observed.

ACETYSALICYLIC ACID AND SULFONAMIDE DRUGS

To the Editor:—Is aspirin contraindicated while a sulfonamide drug is being taken?
Bernard Marcus, M.D., Raritan, N. J.

ANSWER.—Theoretically, there is no contraindication from a pharmacologic standpoint for the simultaneous administration of acetylsalicylic acid and a sulfonamide drug. One practical disadvantage, however, would be that the antipyretic action of acetylsalicylic acid might mask a drug fever, which is one of the early signs of sulfonamide toxicity.

THYROID MEDICATION IN PREGNANCY

To the Editor:—Will thyroid extract in small doses during the second and third trimesters of pregnancy induce premature delivery of the fetus? Does hypometabolism (low basal metabolic rate) frequently recorded during pregnancy possess clinical significance?
M.D., Maryland.

ANSWER.—Evidence that small doses of thyroid precipitate early labor is lacking. The evidence and general consensus indicate the opposite to be true. It is for this reason that many physicians almost routinely give small doses of thyroid during the first two trimesters and also to women with fertility problems to prevent abortion.

The basal metabolism tends to rise during pregnancy, particularly toward the end, the average figure quoted being plus 4.5. This may account for the fact that many women feel much better than usual during pregnancy.

The whole subject of basal metabolism presents many problems, including the test itself. One should not rely on the basal metabolism test too completely but should use other tests and signs, such as blood cholesterol, pulse on awakening in the morning and the other general signs and symptoms of lowered metabolism.

It appears natural for the metabolism to rise during pregnancy, because even during sleep the maternal organism is working harder than usual to produce and nourish the fetus.

GARGOYLISM

To the Editor:—Other than general and orthopedic care is there any therapy of value in the treatment of lipochondrodystrophy (gargoylism)?
M.D., Tennessee.

ANSWER.—There is no known treatment of value for this condition.

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MEDICAL CRITICISM OF MODERN AUTOMOTIVE ENGINEERING

Chairman's Address

FLETCHER D. WOODWARD, M.D.
Charlottesville, Va.

Having been impressed by the rising number of deaths and injuries occasioned by the automobile, it occurred to me that by studying the types and mechanisms of these injuries certain facts could be determined which would prove that many of these deaths and injuries could be prevented by modifications in automotive design.

Statistics of the National Safety Council, in its last full year's report, revealed that there were 33,700 deaths in motor vehicle accidents in 1946—an increase of 20 per cent over 1945. Injuries were approximately 1,200,000. Costs, including property damage, totaled about \$2,200,000,000. This means 1 death every fifteen and a half minutes and 1 injury every twenty-six seconds, or that during the thirty minutes consumed in the presentation of this paper 2 deaths and 68 injuries will have taken place in this country. The magnitude of the problem is to some extent shown in a chart (fig. 1) from the National Safety Council's annual report.¹

To combat this appalling carnage, so evident to the physician who is called on to treat the victims at all hours of the day and night, it is obvious that the physician should combat it by his influence and as his duty as a citizen, as well as a professional person.

In the first place, he should urge the teaching of safe driving to teen-agers in high schools, since the death rate in the 15 to 24 year age group in 1946 was 33.8 per 100,000 population—a figure exceeded only by the rate among persons of 65 or older. Further, a considerable number of these elderly victims were pedestrians. In 5,521 high schools out of 25,300, classroom driver education is offered, and 545 schools also provide actual behind the wheel instruction. Two million boys and girls reach driving age each year, of whom 50 per cent become drivers. A study by the American Automobile Association of young men drivers graduated from Cleveland High Schools indicated that the accident rate of those who received training in high

school was substantially lower than the accident rate of those without training.

Since approximately 15 per cent of all accidents involve mechanical defects, the physician should urge frequent spot checks of automobiles by the state police. Since drivers with physical defects are involved in about 8 per cent of the fatal accidents, he should urge periodic and careful reexamination of all drivers at least to help in the reduction of this smaller percentage.

From a professional point of view, the American Medical Association has already recognized its interest and responsibility in regard to this problem by appointing a committee, headed by Dr. Herman A. Heise, of Milwaukee, to study motor vehicle accidents, and the Board of Trustees has also ordered the publication in THE JOURNAL of an annual report on this subject.

This committee, in conjunction with other similar committees of special societies, should be in a position to set up minimal standards of physical fitness as a guide to state police in their examination of prospective drivers and in their periodic reexamination of all drivers. In establishing such minimal requirements, it would be necessary to consider visual acuity, visual fields, depth perception, night blindness, persistence of dazzle, hearing, reaction time and many other physiologic qualities involved in the operation of the automobile. However, in defense of drivers with physical defects, I would like to quote a statement of Mr. W. C. James, Director, Statistical Division, National Safety Council, in a personal communication. He stated, "I think the actual experience of drivers with some physical defect, as indicated by state reports, tends to bear out my belief that most drivers with defects, particularly where those defects are for the most part corrected by mechanical devices, are able to compensate for those defects sufficiently to drive a car safely in noncommercial operations." Considerable work has already been done on chemical tests for the determination of critical levels of alcohol in the blood and urine for use in the detection of the drunken driver.

In studying the types of accidents as seen in the University Hospital of Virginia, certain injuries were observed to predominate. These are injuries to the face and head (figs. 2 and 3), usually caused by impact of the head against the dashboard, the windshield or the rear of the front seat. Crushing injuries to the chest of the driver occur when he is driven against the steering wheel (fig. 4). Injuries to the hip (fig. 5), pelvis, patella and femur (fig. 6) are caused by the protective rotation of the body when propelled forward on impact. Injuries to the elbow (fig. 7) are usually caused by a blow to the elbow when projecting from the window and usually affect the driver. Of course,

From the Department of Otolaryngology, University of Virginia Hospital, Charlottesville, Va.

Drs. Edward L. Corey and Cary Moon, University of Virginia Medical School and Hospital helped in the preparation of this paper.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 24, 1948.

1. Annual Report, National Safety Council, 1947; Virginia Traffic Accident Facts, 1946.

many other types of injuries occur, of greater or lesser degree, but these comprise the most serious and the most frequent in our experience. Associated with many of these are internal injuries to the abdominal viscera, lungs and brain. Some of the victims suffer from severe shock and subsequently die.

Studying the reasons for and mechanics of these accidents makes obvious that redesign of the automobile can prevent many. The opinion that automotive engineering is of professional interest to the physician may appear at first glance as rather ill founded. However, a study of the types of injuries encountered and the close relationship between engineering and medicine, as exemplified during the past war (particularly in aviation medicine), should convince the most doubtful of the advantages in such a relationship to the safety of

in the last two or three years, despite heavy increases in traffic volume, there is still much to be done. In the early 1930's approximately 16 persons were killed for every 100,000,000 miles of motor vehicle travel. In 1947 fewer than 9 persons were killed for every 100,000,000 miles. This reduction in mortality rate

Types and Sources of Injuries Seen at the University of Virginia Hospital *

Type	Number	Wind-shield	Dash-board	Steering Wheel	Others
Injuries—Head and Neck					
Abrasions.....	63	29	22	5	7
Lacerations.....					
Contusions.....	10	2	5	1	2
Fractures.....	9	4	4	0	1
Concussions.....					
Total.....	82	35	31	6	10
Injuries—Hip and Leg					
Abrasions.....	18	0	16	0	2
Lacerations.....					
Contusions.....	10	0	6	0	4
Fractures.....					
Total.....	28	0	22	0	6
Injuries—Arm					
Abrasions.....	4	2	1	0	1
Lacerations.....					
Contusions.....	3	1	0	0	2
Fractures.....					
Total.....	7	3	1	0	3
Injuries—Chest					
Contusions.....	9	2	1	6	0
Fractures.....	3	0	1	2	0
Total.....	12	2	2	8	0
Injuries—Central Nervous System					
Concussions.....	10	6	3	0	1
Vertebral fracture.....	6	1	1	0	4†
(with or without cord compression)					
Total.....	16	7	4	0	5

* The statistics were compiled during a period of seven months from the records of approximately one third of the cases only, since in the remaining two thirds the source of the injury was not stated.
† Two of these resulted from the front seat being thrown forward.

the passenger. A few of the aeronautic problems requiring such joint application of knowledge were: (1) parachute harness design, (2) of escape hatches, (3) design of the positioning of flight instruments, (4) shape and placement of control handles, (5) design of oxygen equipment and the pressurization of cabins, (6) flight clothing, (7) cockpit standardization, (8) the ejection seat and (9) crash injury prevention, ditching procedures, air sea rescue equipment and technic—to mention only a few.

In airplane design, the engineer has realized that performance is dependent on two distinct factors, the machine itself and its operator. The same is equally true of the automobile, its record on the highways depending on both the characteristics of the machine as well as those of its driver.

Although the motor vehicle accident rate has been substantially reduced over the years, and particularly

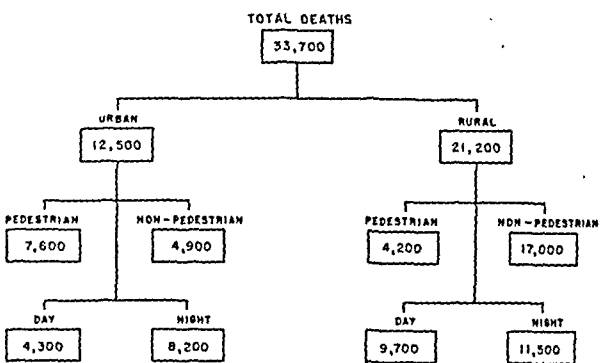


Fig. 1.—An analysis of traffic accident fatalities, 1946.

can be attributed to the indefatigable work of the National Safety Council and the many other organizations and persons who were interested in this problem. Without this reduction there would have been close to 60,000 deaths in 1947, as compared to the 32,000 which actually occurred.

However, in spite of the success of these campaigns, the automobile still remains a lethal and crippling agent, and since there appears to be little likelihood of accomplishing radical changes in human nature in general and exuberant youth in particular, it would seem the

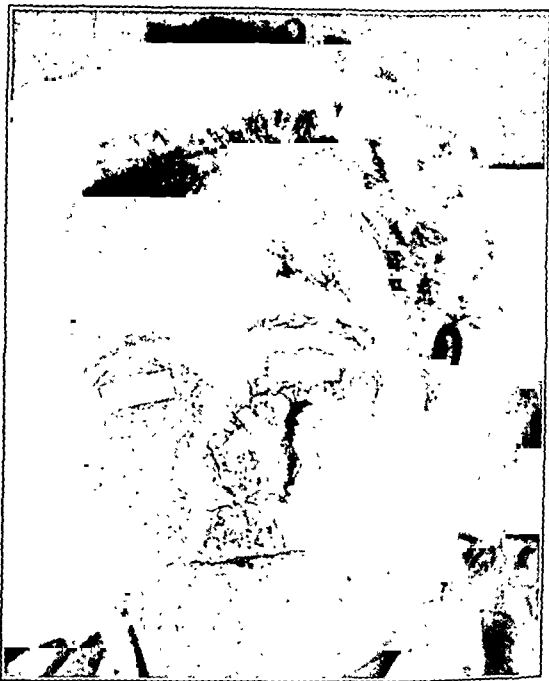


Fig. 2.—Facial contusion and laceration from dashboard or windshield.

part of wisdom to shift the emphasis, for the moment at least, to desirable alterations in the machine itself, rather than to place all emphasis on attempts to bludgeon "old Adam" into safer driving practices.

Our highways are becoming increasingly laden with cars driven by average persons, and it appears inevitable that these machines will continue to collide, pass on

turns, fail to observe stop signs, leave the road at high speeds and afflict mankind much as they have in the past.

A shift of thought away from the fields of "safety regulations" and "law enforcement" has resulted in the suggestions to be presently advanced which are intended as measures to save life and prevent injury when automobiles are mismanaged.

SUGGESTIONS FOR SAFETY

Speed.—Speed was a factor in two out of five fatal accidents,¹ and in many of our most serious accidents it was the main factor. Whenever a driver is involved in an accident while operating faster than conditions warrant, speed is reported as a factor in the accident, although this speed may be no more than 15 to 20 miles per hour. However, in 20 per cent of the accidents¹ in which speed was a factor, the speed was greater than 50 miles per hour. The problem of high speeds could be solved simply by the use of governors on all cars, limiting the top speed to 55 miles per hour, but in no way interfering with acceleration at lower speeds. Since one is inclined at first hand to assume that the public will not tolerate such control, it might be interesting



Fig. 3.—Depressed fracture frontal bone, from impact against rear of front seat.

to quote from a survey made by the Traffic Engineering and Safety Department of the American Automobile Association.² The following questions were asked, among many others. "If a simple device were developed to limit the top speed without affecting acceleration at lower speeds, would you favor its incorporation in new passenger cars?" Of the 4,102 replies received, 4 persons answered "yes" for each 3 that answered "no." The top speed in the group favoring governors was 55 miles per hour.

STRUCTURE

Frame and body of welded "unit construction" would be helpful. Such structure should also include "crash struts," as found in aircraft.

Windshield and Windows.—Windshield and windows should be made of "a plastic material," in order to eliminate cuts from broken glass, a common finding in accident victims. A windshield which ejects on impact is at present standard equipment on one of the newer automobiles and should, no doubt, prevent many injuries. However, "a plastic material" instead of safety glass will give added protection. While special cleaning

materials and technics are required, its use in aircraft is universal and satisfactory. The same material should also be used in headlight lenses. Both windshield and rear windows should more nearly revert to the vertical, for better visibility, particularly important in rain, sleet and snow.



Fig. 4.—Severe crushing injury of the chest from steering wheel, with fractured ribs, pneumothorax (right) and interstitial emphysema.

Doors.—Single doors should be standard, with windows large enough to serve as escape hatches and high enough to prevent passengers from riding with their elbows comfortably protruding. Sponge rubber elbow



Fig. 5.—Dislocation of hip, from body rotation on impact.

rests would take care of passenger comfort. The door latches should be operated both from rear and front seats, with the safety lock on the front latch, to prevent the opening of the door by children.

² Research Report no. 29, American Automobile Association Traffic and Engineering Department, July 1, 1946.

Bumpers.—The front bumper should be mounted on "oleo shock absorbers," in a manner similar to the landing gear in airplanes, which quickly and efficiently absorbs the shock of the heaviest planes on landing, even when poorly executed.

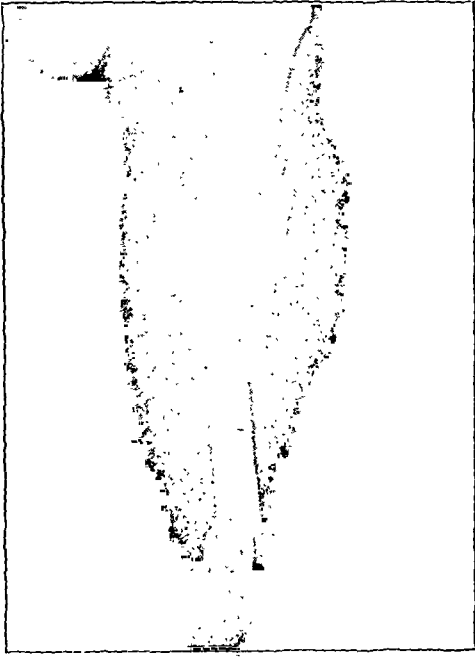


Fig. 6.—Multiple fractures of femur, from impact against dashboard.

Tires.—(a) Tire treads should be designed to give maximum traction and to provide the best antiskid qualities, on the basis of actual tests by some disinter-



Fig. 7.—Fractured elbow, from side swipe while elbow was protruding from car window.

ested agency. (b) Danger from blow-outs should be eliminated as far as possible by the use of blow-out-proof tubes, even at the expense of some riding comfort, if necessary.

Interior Devices.—(a) A glare-proof rear view mirror, for night driving; (b) a latch to lock the backs of front seats in position in the coach type cars, to prevent the added impact of them to the front seat passengers in sudden stops; (c) safety belts, such as are used as standard equipment in aircraft—their use might well be one of the most effective single factors in preventing serious injury; (d) a hydraulic steering column which will move forward under a force of approximately 100 foot pounds—this would do much to prevent chest injuries of the driver from forceful impact against the wheel; (e) crash pads—the installation of sponge rubber padding on the dash and back of front seats would eliminate many of the head injuries so common today—and (f) elimination of all projecting handles, knobs, buttons and such items from the interior and also from the exterior wherever possible.

Exterior Lighting.—The importance of exterior lighting to safety is apparently well appreciated by the Interstate Commerce Commission, but has been neglected by the manufacturers of passenger cars. Such lighting

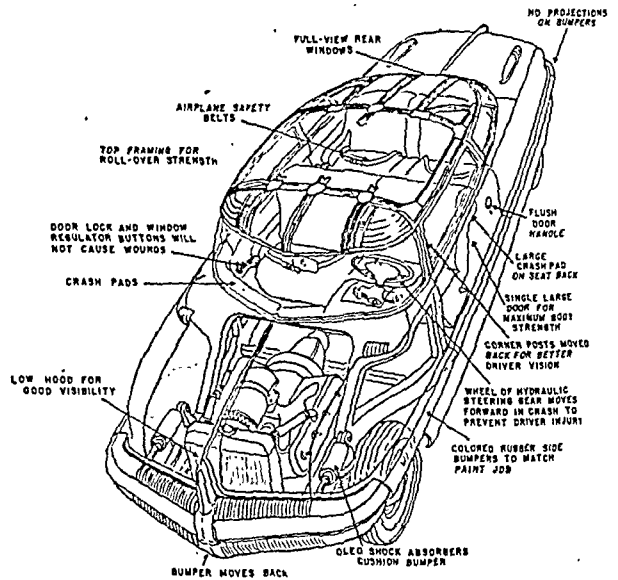


Fig. 8.—Design of car embodying proposed safety devices, as drawn by Stewart Rouse, *Popular Science Monthly*, April 1947, in article by Devon Francis, "Cars Can Be Safer."

should include: (a) red reflectors at corners of fenders and top, (b) blinking turn indicators front and rear. (c) large stop light and dual tail lights and (d) luminous paint on outside margins of trucks, trailers and busses and consideration of its use for strip marking on highways.

Vision.—(a) The provision of the largest possible visual field is of the utmost importance. This should be of a full 360 degrees, with top-supporting columns reduced to a minimum compatible with safety in the event of turning over. Front supporting columns should be moved further to the rear.

Lowering and shortening of the hood would give a much better view of the roadway, especially on sharp hills. In the Automobile Association of America's survey,² two thirds of the replies checked the driver's view of the roadway as the most important single factor in body design. Less than 1 in 6 voted for appearance. More nearly vertical windshields and rear windows have been previously mentioned.

(b) Shiny, reflecting surfaces should be eliminated from the driver's visual field. This could be simply

accomplished by eliminating all chromium trim and by painting the top of the hood and dash a nonreflecting dull optical black. The use of such paint on metal aircraft has long been an established convention.

(c) The speedometer should be placed at the top of the instrument panel, directly in front of the driver, since it is his most important instrument. In addition to the miles per hour, it should also include the stopping distance in feet under average driving conditions, as a constant reminder for safe driving. Both the speedometer and other dials should be illuminated by means of a "Navy red" light to maintain the driver's dark adaptation at night. A flashing red light or auditory signal might well be included to indicate the maximum safe speed of 55 miles per hour. Again, the Automobile Association of America's survey noted four fifths of their replies voted for dials to be located for easy reading. Finally, the light switch should be placed on the driver's side of the panel and designed to eliminate error when operated by "feel."

(d) The use of a polarized windshield to minimize glare from the highway would be of particular value and, when coupled with oppositely polarized headlight lenses, "blinding" in night driving would be eliminated. The added cost could, no doubt, be largely absorbed by the elimination of clocks which do not run, radios, radiator ornaments and other useless gadgets which are now included in the cost of an automobile whether wanted or not.

(e) More adequate defrosters and windshield wipers should be provided. This defrosting and wiping equipment should be installed at both windshield and rear windows, and the wipers should be so designed as to wipe a larger area than at present.

COMMENT

There is an abundance of evidence (obtainable from air crash reports) that the adoption of construction methods and safety features now employed by the aviation industry would render it at present possible to build motor cars capable of withstanding collisions, leaving the road at high speed and overturning, with greatly reduced likelihood of injury to their occupants, as well as reducing the likelihood of such accidents. It is suggested that a cooperative attempt by the automotive industry and the medical profession to produce such vehicles would be well worth while, especially since the automotive industry will be soon faced with the design of radically different vehicles (fig. 8).

The magnitude of the medical, economic and social problems entailed by the continued use of the motor car in its present form far outweighs in importance any monetary consideration arising from the necessarily high costs of such research and new design. The only influence of aircraft design apparently so far adopted by automotive engineers is the erroneous one that the aerodynamic principles of a jet-propelled aircraft should be applied to a vehicle the speed of which should be limited to 55 miles per hour on the ground.

I agree with Mr. A. W. Stevens, President of the Automobile Safety Association of Boston, when he says, "Automobiles should be redesigned to stress safety rather than speed and appearance. This suggestion has often been made, but has been religiously disregarded by automotive engineers and manufacturers."

I also agree with a recent editorial in the *Times Dispatch*, Richmond, Va., in a discussion of this problem, which concluded with this statement: "Disregard of human life has always been the measure of barbarism. If we are to become more civilized, we must place the

value of human life above the prestige value of speed and appearance in motor cars."

It is my confirmed belief that ultimately the design of the automobile will include installations necessary to the reasonable safety of its passengers. Meanwhile, it is interesting to speculate as to the traffic casualty incidence which will be tolerated before some concerted action along these lines will be taken—2,000,000 casualties annually? 3,000,000? It would be to the credit of the medical profession generally if the impetus toward furnishing the public with a safer means of transportation should be supplied from among their number.

CLINICAL PROBLEMS IN PENICILLIN SENSITIVITY

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ARTHUR W. GLICK, M.D.

and
ABNER KURTIN, M.D.
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With the rapidly increasing use of penicillin, the problems surrounding the management of patients who manifest reactions to this drug assume immediate practical importance. It is the purpose of this paper to describe some of the forms of reaction which we have encountered, with emphasis on the allergic eruptions following systemic administration, to evaluate the diagnostic and prognostic significance of the penicillin cutaneous test and to present our experiences with penicillin desensitization.

CLINICAL MATERIAL AND METHODS

The persons tested for sensitivity to penicillin and trichophytin included 406 adults, 250 men and 156 women, and 91 children, ranging in age from 2 months to 12 years. Of the 406 adults, 276 had never had penicillin and 130 had received the drug in varying amounts. Of the children, 65 had had no penicillin and 36 had received it.

Tests were performed by the intradermal method, readings being made either at forty-eight hours for the delayed reaction or at fifteen minutes for the immediate response. To induce the latter reaction, the standard allergic test dose, 0.01 to 0.02 cc., was employed; for the former test, 0.1 cc. of penicillin solution was injected. In the course of these experiments several brands of commercial penicillin in many different lots were used, but all reactions to these were checked by a simultaneous cutaneous test with crystalline penicillin of known potency. In the early days of this work the crystalline penicillin used was that of the Food and Drug Administration; later, other crystalline preparations were used.

Our standard cutaneous test for the delayed intradermal reaction employs 2,000 units, or about 1.2 mg., of crystalline penicillin in 0.1 cc. of isotonic solution of sodium chloride. A good, preferably light-colored, commercial preparation of the amorphous form may be substituted if necessary, or the preparation with which the patient's reaction may have developed may be used. Then, it is best to use a crystalline penicillin or a known nonreactor as a control, for some reactions may be due to factors other than the penicillin.

Additional tests employed included the immediate intradermal reaction, for which the same concentration of crystalline penicillin may be used, although with a smaller test wheal, as already indicated. Amorphous preparations are more likely to give non-

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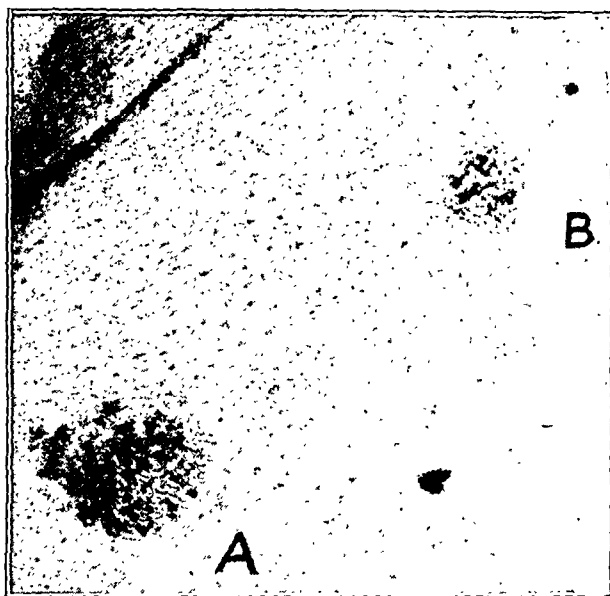
Read before the Section on Dermatology and Syphilology at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

specific wheals; with these it is best to use a solution of 5,000 units per cubic centimeter concentration.

The trichophytin preparation employed was freshly made in our laboratory from *Trichophyton mentagrophytes* according to a method previously described.¹ The trichophytin tests were performed in the standard manner, with a 1:30 dilution in 0.1 cc. of isotonic solution of sodium chloride. Readings were made at forty-eight hours and again, on occasion, at three to five days.

TESTS OF PENICILLIN SENSITIVITY

The Delayed (Forty-Eight Hour) Cutaneous Test.—The most important test of penicillin sensitivity is, in our opinion, the delayed reaction to the intradermal injection of penicillin. It was first described by Welch and Rostenberg,² who noted its occurrence in 5 per cent of 140 persons who had had no previous treatment with penicillin. When performed with 2,000 units (1.2 mg. of crystalline penicillin G in 0.1 cc. of isotonic solution of sodium chloride and readings made forty-eight hours later, the test offers a reliable index of penicillin sensitization. The reaction to this test is similar to that of the trichophytin test. The character-



Photograph showing, A, characteristic positive reaction to the intradermal penicillin test (2,000 units) after forty-eight to seventy-two hours, and, B, a positive reaction to trichophytin. This patient, who never had penicillin, is one with so-called spontaneous sensitivity.

istic of the reaction at its height is an area of erythema, often rather vivid, which is usually associated with edema or infiltration. This induration may be prominent enough to give the resulting lesion a plaquelike appearance. The reaction area is at least 1.0 cm. in diameter, but it may reach three times this size and may be studded with small papules and even vesicles. Rarely, central necrosis may be observed. As with the trichophytin test, the largest diameter of the area of reaction may not be reached until three to five days after testing and the lesion may persist for a week or longer, gradually disappearing, with scaling. Local pruritus is a common accompaniment of the reaction to the test.

In several instances, we have shown that measures which destroy the antibiotic potency of penicillin also

abolish its antigenic activity, as indicated by its capacity to elicit a delayed type of specific positive cutaneous reaction. This parallelism is strong evidence that the cutaneous reaction is due to penicillin itself and not to any other factor which might be present, even in the crystalline product. The exquisite sensitivity of some patients is indicated by the results of tests with small quantities of penicillin. In 1 patient, a positive reaction could be elicited with 5 units, or approximately 0.0025 mg., of crystalline penicillin. In another patient, a measurable reaction of erythema occurred to 5 units and was still visible when only 2 units, or 0.0012 mg., of penicillin G was used. In this patient comparable sensitivity on cutaneous test was shown to pure penicillin X as well.³

The Patch Test.—In our hands this test was of doubtful value as an index to general penicillin allergy. Our series does not include the forms of dermatitis following topical application of the drug, in which the patch test may be of greater usefulness. Applied in ointment form, with 1,000 to 2,000 units of penicillin per gram, in a base of hydropur wool fat U. S. P. and petrolatum, the test gave a negative reaction in 63 patients. When employed as a dry patch containing 100,000 units of amorphous penicillin, the test also yielded negative results, except in persons with pronounced sensitivity, as proved by the graded intradermal test. With the technique which we employed, the penicillin patch test could not be relied on as a sensitive indicator of penicillin allergy.

The Immediate Intradermal Cutaneous Test.—Reactions to this test, in which whealing was looked for after ten to fifteen minutes, were negative in our series. The test was performed on 82 subjects who had received penicillin without reaction, and also on 10 patients in whom an eruption of the urticarial type had occurred as a result of penicillin treatment. In every instance the reaction was negative. The urticaria does not accompany the positive reaction to the penicillin test of the delayed type. In 3 patients with urticarial reaction to penicillin, tests using a penicillin-human plasma albumin complex gave negative results. That this preparation contained active penicillin was proved by elicitation with it of a delayed type of positive reaction in a suitable subject.⁴

CLINICAL REACTIONS TO PENICILLIN

Other investigators reported a variety of reactions to penicillin encountered both on topical application and on systemic administration. These reactions ranged from localized dermatitis to widespread eruptions and included many of the manifestations associated with serum sickness. In subjects who reacted more violently, hyperpyrexia, asthma, pulmonary edema and vasomotor collapse were observed. Our own experience dealt wholly with the two major, relatively common types of reaction to systemic treatment with penicillin: type 1, reactions of the urticarial, serum-sickness-like type, in which sensitization is induced by treatment; type 2, reactions with an erythematovesicular eruption, resembling the trichophytids.

Type 1: Reactions of the Urticarial, Serum-Sickness-Like Type.—The urticaria and the erythemas, together with joint pains and fever in some instances, occurring after a definite incubation period, comprise the com-

1. Peck, S. M., and Glick, A.: Trichophytin with Special Reference to the Specific Skin Reactive Factor, *Arch. Dermat. & Syph.* **43**: 839 (May) 1941.

2. Welch, H., and Rostenberg, A., Jr.: Hypersensitivity of the Tuberculin Type to Crystalline Penicillin Sodium, *J. A. M. A.* **126**: 10 (Sept. 2) 1944; A Study of the Types of Hypersensitivity Induced by Penicillin, *Am. J. M. Sc.* **210**: 158 (Aug.) 1945.

3. Crystalline penicillin X was supplied by Lederle Laboratories, Inc., Pearl River, N. Y.

4. Chow, B. F., and McKee, C. M.: Interaction Between Crystalline Penicillin and Human Plasma Protein, *Science* **101**: 67 (Jan. 19) 1945. This preparation was supplied us by the Squibb Institute for Research, New York.

monest allergic reaction to penicillin. Because of the time needed for development of the newly induced sensitivity, the reaction was called the delayed type by Kolodny and Denhoff.⁵ Not rarely it manifests itself only several days after treatment with the drug has ended. In rare cases this interval may be as long as three weeks. Severe reactions, with angioneurotic edema, asthma, hyperpyrexia and pulmonary edema, have been described. Some reactions which occur on second or subsequent administration of the drug may be of the accelerated type, with a short or no incubation period. This acceleration is comparable to what may occur on readministration of other drugs (e.g., the sulfonamide compounds) or serum.

In 25 of our patients (21 men and 4 women) reactions developed which were of this type. The eruption varied from slightly patchy erythema of a transient character to pronounced, generalized urticaria of considerable severity. Macular erythemas not of an urticarial type were common. In several patients the eruption was limited to the buttocks and thighs. In most instances there were none of the accompanying manifestations that simulate serum sickness. However, in 2 patients there was a rise of temperature, and mild joint pains were noticed by several others. In most subjects, the eruption had followed intramuscular injections, but in 1, tablets taken orally in good-sized doses for one day only were sufficient to elicit a typical serum-sickness-like reaction nine days later. Other reactions of this kind have been reported to us, and it is apparent that the oral route is not a safeguard against them. In another patient the urticaria followed bronchoscopic instillation. In all subjects the eruption cleared within several days, although we have been informed of rare instances in which urticaria after penicillin therapy continued several weeks.

The usual incubation period was seven to twelve days. For 1 patient it was as long as eighty days, while he was receiving continuous therapy. In 2 subjects the reaction began on the second or third day. One of these patients had a definite history of previous treatment with the drug. For the other patient there was no explanation, unless the patient had failed to give an accurate history on this point.

In 10 subjects—all men—the cutaneous test gave a positive reaction. The reaction to the trichophyton test was positive in only 4 subjects—all men. While a positive reaction to a penicillin test is helpful in confirming a diagnosis of this type of allergy, a negative reaction does not exclude it. Since the reaction to penicillin may be positive in more than one third of such persons, the test is worth doing in an effort to prove that an eruption is due to penicillin. Thus, the test might have practical value when several medications are being given simultaneously. The problem then arises as to which drug is responsible for the eruption and whether the penicillin must be discontinued.

The incidence of the delayed type of positive reaction to the penicillin test in this group of patients, amounting to 40 per cent, was far greater than that in the group who had never received penicillin. The so-called spontaneous positive reaction, as has been noted by other investigators, occurred in about 5 per cent of such persons routinely tested. The close correlation of the results of the forty-eight hour cutaneous test with penicillin and the clinical sensitivity to the drug was further borne out by another observation. Of 98 patients who had received penicillin without reaction,

not 1 reacted positively to the cutaneous test. Of all patients receiving penicillin whom we tested, 130 in number, 17 had a positive cutaneous reaction of this type, an incidence of 13.4 per cent. The expected incidence of positive reactions in a group that had not received penicillin, as judged from our own observations and the experience of others, would be about 5 per cent, or 6 patients. The conclusion is justified that the more frequent occurrence of the positive reaction after penicillin treatment is itself the result of induced sensitization to the drug. Among 36 children 12 years of age or less who had received penicillin, 1 had a positive reaction to the penicillin cutaneous test.⁶ Two other children had an eruption during treatment which was believed to be due to the drug, but the test gave a negative reaction.

Of particular interest is the preponderance of men among persons receiving penicillin who gave a positive reaction to the cutaneous test with penicillin after forty-eight hours. All 17 patients with a positive reaction were men. This striking predominance is noted throughout all types of penicillin sensitivity, whether urticarial or erythematovesicular or of the latent "spontaneous" type.

The immediate intradermal test was also performed on 10 of these patients, with negative results. In 3 subjects this test was performed with a penicillin-human plasma albumin complex, as well as with crystalline penicillin, but the result was negative for each form.

Thus, with the urticarial type of penicillin allergy, an eczematous cutaneous test lesion appears to be the best objective index of sensitivity. This manifestation is an instance of a discrepancy between the cutaneous test and the clinical lesion of the disease. Whether the eczematous response is due to concomitant epidermal sensitization, perhaps to seepage along the needle track, is a matter of speculation. Perhaps the sharp demarcation of the vascular allergic reactions from the epidermal reactions, which is a generally accepted hypothesis, requires modification, particularly in some instances of penicillin allergy.

The induced urticarial form of penicillin allergy is often temporary, even transient, in character. This observation is in accord with that of Lyons⁷ who expressed the view that this form of penicillin allergy is transient and does not usually recur with readministration. Thus, in 1 of our patients large areas of patchy erythema, as well as typical urticarial wheals, appeared on the trunk two months after the beginning of treatment. The use of the drug was continued, however, with the aid of tripeleminamine hydrochloride N. N. R. ("pyribenzamine hydrochloride"), and, ultimately, the mild eruption disappeared and did not recur. Similar observations were made on a number of our patients and may be found in the literature. In 2 patients of this group whose reactions to the cutaneous test were positive, retests made fifteen months later gave negative results.

However, exceptions occurred, such as in the young man who had had severe urticaria and joint pains after bronchoscopic instillations of penicillin and who still had a positive reaction to a penicillin cutaneous test of the forty-eight-hour type eighteen months later. He also reacted with a mild, general pruritic eruption after only a few doses of the drug on two occasions three and fifteen months from his initial reaction.

6. This boy, 12 years of age, had a general urticarial and a local eczematous reaction on the buttocks.

5. Kolodny, M. H., and Denhoff, E.: Reactions in Penicillin Therapy. *J. A. M. A.* 130:1058 (April 20) 1946.

7. Lyons, C.: Penicillin Therapy of Surgical Infections in the U. S. Army. *J. A. M. A.* 123:1007 (Dec. 18) 1943.

One of the patients in this group had a previous history of mild urticaria. On cutaneous testing with standard allergens, a positive reaction was obtained to timothy extract, but other tests gave negative results, including that of *Penicillium* spore extract. Two other persons with urticaria due to penicillin, who are not included in this series, had a history of allergy. However, the majority of our patients gave no history of allergy.

A basic practical point is the preponderance of this form of penicillin allergy, as with the other form, among men. Of 25 patients in this group, 21 were men and 4 women. In view of these statistics, allergic reactions to penicillin can be anticipated to occur at least three times as frequently among men as among women (table 1). There is a comparable low incidence among children. We encountered only 3 cutaneous eruptions in a group of 36 children receiving penicillin.

In the management of patients with this form of penicillin allergy, treatment with the drug is usually stopped if the indication for its use is not urgent or the reaction is a severe one. However, if the need for penicillin is great and the reaction mild, the penicillin may be continued with the aid of symptomatic medication, such as

Type 2: Reactions with Erythematovesicular Eruptions, Trichophytid Type.—This form of penicillin sensitivity may be conceived of as existing in a latent and in an active stage. The former stage is characterized by no clinical phenomenon but simply by the presence of a positive reaction to the forty-eight hour penicillin cutaneous test without a history of previous administration of the drugs. This reaction is the so-called spontaneous one of the tuberculin type, to which attention was first called by Welch and Rostenberg.² The active stage, based on the preexisting latent sensitivity, is that of the characteristic erythematopapulovesicular eruption, which tends to localize primarily on the hands and feet and in the groins. It often becomes generalized and may start on the trunk, but the most intense portions of the eruption are likely to be on the hands and feet. Here it develops most fully, often progressing to a severe vesiculobullous reaction, which may become pustular. General desquamation is usual, and, if acute, the reaction takes on the character of an exfoliative dermatitis. Pruritus may be intense. Milder instances, with only slight interdigital vesiculation or exfoliation of the palms, also occur.

TABLE 1.—*Penicillin and Trichophytin Reaction in Patients Who Have Received Penicillin*

Group Tested	Number Tested	Positive Reaction to Penicillin		Positive Reaction to Trichophytin		Positive Reactions to Both Penicillin and Trichophytin		% Negative Reactors to Trichophytin Among Positive Reactors to Penicillin	% Positive Reactors to Penicillin Among Positive Reactors to Trichophytin
		Number	Percentage	Number	Percentage	Number	Percentage		
Adults.....	130	17	13.17	28	21.5	8	6.1	8.7	28.5
Men *.....	82	17	20.17	25	30.4	8	9.7	15.7	32.0
Women *.....	48	0	.....	3	6.2	0	...	0	0
Children.....	36	1†	.....	0	.....	0	...	.....	.....
Type 1‡ (21 men, 4 women)...	25	10 (men)	.....	4 (men)	.....	2	...	38.0	50.0
Type 2 (all male adults).....	7	7	.....	6	.....	6	...	0	100.0
No reaction.....	98	0	.....	18	.....	0	...	.....	.....

* Eruptions developed in 24.2 per cent of all men and in 8.3 per cent of all women.

† This child was 12 years old.

‡ This group included 3 boys, 12 years, 3½ years and 10 months of age, respectively.

epinephrine and the antihistamine drugs. The problem will arise of the readministration of the drug to patients who have had a previous urticarial, or similar, reaction. Such factors as the type and severity of the reaction and the interval since its occurrence should be taken into consideration. Substitute medication, such as the sulfonamide compounds, ought not be forgotten. If it is decided to use penicillin again, it is probably wise to give a few tests or provocative doses at intervals of six hours. Should these doses fail to elicit a reaction, treatment may be started, but preferably in small doses at first, such as 2,000 to 3,000 units every three hours. Dosage may be gradually increased during the next several days.

A preliminary cutaneous test might be useful in patients with a history of reactions, but an accurate reading cannot be expected before twenty-four hours. If the reaction is positive, it would suggest even greater caution, as persistent clinical sensitivity is then much more likely. In all cases with a history of previous reaction, it is unwise to give large doses, to employ the oil and beeswax preparation, or to administer the drug intravenously without preliminary tests of the type suggested. In some instances, it may be necessary to resort to desensitization. This procedure will be discussed later. Again, it may be emphasized that the induced sensitivity to penicillin is often temporary, and the drug is tolerated well on readministration.

MECHANISM OF "SPONTANEOUS" SENSITIVITY

Latent Stage.—Among 276 adult ward patients who had never received penicillin, there were 15 with a delayed positive reaction to a penicillin cutaneous test. This incidence of 5.4 per cent confirmed the earlier report by Welch and Rostenberg² of an incidence of about 5 per cent. Of 168 men who had received no penicillin, 11 showed a positive reaction to the penicillin test. Of 108 women, 4 reacted positively. Of 65 children, none had positive reactions.

Welch and Rostenberg² attributed this form of positive reaction to exposure to *Penicillium* spores from inhalation or handling. However, several later studies indicated a more probable explanation for this apparent "spontaneous" sensitivity to penicillin. The observation, first made by Graves, Carpenter and Unangst,⁸ of the occurrence of vesicular eruptions on the hands and feet following penicillin treatment suggested to the workers a relation between these eruptions and previous fungous disease of the skin. Their observations have been confirmed by other investigators.⁹

8. Graves, W. N.; Carpenter, C. C., and Unangst, R. W.: Recurrent Vesicular Eruptions Appearing During Administration of Penicillin, *Arch. Dermat. & Syph.* 50:6 (July) 1944.

9. Lamb, J. H.: Allergic Reactions During the Administration of Penicillin, *Arch. Dermat. & Syph.* 52:93 (Aug.) 1945. Cormia, F. E.; Jacobson, L. Y., and Smith, E. L.: Reactions to Penicillin, *Bull. U. S. Army M. Dept.* 4:694 (Dec.) 1945. Bauer, G. H.: Allergic Dermatoses Complicating Penicillin Therapy, *Arch. Dermat. & Syph.* 54:292 (Sept.) 1946. Kolodny and Denhoff.⁵

A significant clue to the mechanism by which dermatophytosis may induce a positive reaction to the penicillin test, ultimately leading to the eruptions of this type, is to be found in the work of Peck and Hewitt.¹⁰ These investigators showed that common pathogenic fungi, which are responsible for many of the dermatomycoses, are capable of producing an antibiotic substance possessing many of the properties of penicillin. This report is another link in the chain of evidence which makes it entirely probable that in the course of fungous infection of the skin sensitization to penicillin takes place in much the same way as sensitization to trichophytin.

The positive reaction to the trichophytin test may be taken as an index of existing sensitivity to this fungous extract and as an indication of past or present fungous infection. The relation of the positive penicillin reaction to the trichophytin reaction is therefore of great interest (table 2). Trichophytin tests carried out simultaneously in the patients who had not had penicillin treatment showed positive reactions in 92, or 33.3 per cent. Among the 15 penicillin-positive patients, there were 9 who were also trichophytin positive, or an incidence of 60 per cent, almost twice the incidence among penicillin-negative persons.

On the other hand, 6 patients with this form of penicillin sensitivity were trichophytin negative. One must conclude that these patients were sensitized in

with *Penicillium* spore extracts. Moreover, in several subjects with positive reactions to penicillin, the reaction to *Penicillium* extract was negative. Furthermore, the percentage of patients sensitive to penicillin among trichophytin-positive persons was 9.7 per cent, as against 3.2 per cent among trichophytin-negative persons. This incidence offers further evidence of the role of fungous infection in the development of penicillin sensitivity. Additional evidence of the relation between fungous infection of the skin and trichophytin sensitivity, on the one hand, and "spontaneous" penicillin sensitivity, on the other, is found in our observations on 65 children, ranging from 2 months to 12 years of age. In none of these children was the reaction to either the penicillin or the trichophytin test positive. None of them had received penicillin. These negative findings, supported by previous statistical analyses which revealed that children below 12 years of age rarely show a positive trichophytin reaction, thus coincide with the suggested hypothesis (table 2).

It may be noted that of the 15 patients with a positive reaction to penicillin of the delayed type, 11 were men and only 4 were women. Of the 11 men, 8 also reacted positively to trichophytin. The greater tendency among men to latent penicillin sensitivity recalls the higher incidence of trichophytin sensitivity previ-

TABLE 2.—*Penicillin and Trichophytin Reactions Among Patients Never Receiving Penicillin*

Number Tested	Positive Reaction to Penicillin		Positive Reaction to Trichophytin		Positive Reactions to Both Penicillin and Trichophytin		% Positive Reactors to Trichophytin Among Positive Reactors to Penicillin	% Positive Reactors to Penicillin Among Positive Reactors to Trichophytin	% Positive Reactors to Penicillin Among Negative Reactors to Trichophytin
	Number	Percentage	Number	Percentage	Number	Percentage			
276.....	15	5.4	92	33.3	9	3.2	60	9.7	3.2
Men—163.....	11	6.5	63	40.4	8	4.6	72.7	11.7	3.0
Women—109.....	4	3.7	24	22.2	1	0.9	25.0	4.1	3.5
Children—65.....	0	...	0	...	0	...	...	...	...

some other manner, or that in some persons cutaneous infection with a fungus may not induce a positive trichophytin reaction, or that the reaction was only temporary or below the threshold of elicitation. However, these explanations lack force in that trichophytin sensitization appears to occur readily, as indicated by the high incidence of a positive reaction to the fungus among the general population, usually estimated at about 40 per cent.¹¹

Because of the characteristics of the "spontaneous" positive reaction to the penicillin cutaneous test, one may assume by analogy with other similar reactions, whether trichophytin or to tuberculin, that active infection of the body with a fungus capable of producing either penicillin or a closely related substance must have occurred at one time or another. Such an infection may conceivably have involved some tissue other than the skin, such as the lungs. The character of the test itself bespeaks either actual epidermal sensitization, such as might occur with external contact or in dermatophytosis, or the allergy of infection, as in the positive tuberculin reaction. Sensitization from inhalation of *Penicillium* spores could hardly be expected to lead to a reaction of this type. Experience with large groups of atopic persons in this area indicates a low incidence of immediate positive wheal reactions to cutaneous tests

usually observed among men. Thus, in 776 subjects tested by Peck and associates,¹¹ 48 per cent of the men were sensitive to trichophytin, as against 29.9 per cent of the women. It is of some practical value to know that it is particularly among men with dermatophytosis, or with a positive reaction to the trichophytin test, that a "spontaneous" positive reaction to penicillin is most likely to occur. It may be pointed out that there was a preponderance of men in the group with induced penicillin sensitivity, 21 men to 4 women. All 11 patients in the urticarial group with a positive reaction were men. The tendency for men to become more readily sensitized to penicillin is underscored by the observations on group 2, the 7 patients of which were men. The explanation for this sex preponderance is at present obscure. It will be interesting to see whether other series of cases of penicillin sensitivity reported from civilian hospitals support this observation.

CLINICAL SIGNIFICANCE OF THE "SPONTANEOUS" POSITIVE REACTION

In many instances the reaction appears to be a reliable index of general latent hypersensitiveness which warrants great caution in the administration of penicillin. The following case is informative:

C. V., a 40 year old Puerto Rican man with mild, quiescent dermatophytosis, had had no penicillin previously. On cutaneous test, Sept. 8, 1946, he showed a positive reaction to commercial preparations of both amorphous and crystalline penicillin, 2,000 units in 0.1 cc. isotonic sodium chloride solution U. S. P.

10. Peck, S. M., and Hewitt, W. L.: The Production of an Antibiotic Substance Similar to Penicillin by Pathogenic Fungi (Dermatophytes), *Pub. Health Rep.* 60: 148 (Feb. 9) 1945.

11. Peck, S. M.; Botvinick, I., and Schwarz, L.: Dermatophytosis in Industry, *Arch. Dermat. & Syph.* 50: 170 (Sept.) 1944.

The reaction to the latter preparation was the larger, showing an area of erythema 1.5 cm. in diameter and edema with papules. The trichophytin test gave a 4 plus reaction. When the patient was retested six months later, March 3, 1947, the area of reaction to penicillin was 3 cm. in diameter. Desensitization was begun, but the procedure caused some local reactions. On March 12, to determine whether a mild reaction could be elicited, he was given instructions to take penicillin tablets. Although warned to stop the medication at the first sign of eruption or pruritus, he took 300,000 units orally for two days and 600,000 units on the third day. After the first few doses generalized pruritus was noticed, and a general erythematopapular eruption appeared, starting at the sites of previous penicillin tests and injections, but involving especially the fingers and palms and toes in an acute vesiculobullous eruption. By March 17 the eruption was fading, but desquamation of the palms was still noticeable on March 28. A retest of penicillin, 1,000 units, on March 26 produced an area of erythema 1.0 cm. in diameter, but no induration. This area was less than would have been expected in view of the severe preceptive reaction to 2,000 units. It was concluded that the patient was in a stage of relative desensitization as his eruption subsided. Indeed, it may be inferred that the mechanism by which the eruption is terminated is related to the reduction in sensitivity which may follow a violent reaction. Further desensitization was carried on by hypodermic injection of small doses of penicillin at intervals of forty-eight hours, but it could not be completed because the patient lapsed from treatment.

This case demonstrates clearly the clinical significance of the positive reaction to a penicillin cutaneous test as an index of true hypersensitivity. It is also clearcut proof of the relation of the preexisting latent stage of penicillin sensitivity to the development of the erythematovesicular form of eruption which follows penicillin treatment. The presence of dermatophytosis and a strongly positive reaction to the trichophytin test complete the picture.

Such experiences suggest caution in the administration of penicillin to any patient with latent sensitivity to the drug. If there is time, and especially if the reaction is strongly positive, showing sensitivity to as little as 50 units, desensitization by one or another of the technics to be described later should be initiated. If the indication is urgent, perhaps administration of the drug can be started, but in smaller doses than usual, with a gradual increase during the next three to five days. This procedure may avoid an intense reaction, and might even have a desensitizing influence.

On the other hand, a positive reaction does not inevitably indicate that a general reaction will occur to penicillin treatment. Thus, patient L. G. had a moderate positive reaction to penicillin, but four months later he was able to tolerate the drug by aerosol inhalation in good dosage, and 40,000 units intramuscularly every three hours as well, without cutaneous eruption or other untoward effect. It is not known whether at the time of penicillin administration the cutaneous test still elicited a positive reaction.

In 2 persons the reaction was still positive after intervals of twelve and eighteen months, respectively. In 2 other subjects it was positive after intervals of four and six months, respectively, and the reaction might have persisted longer but for desensitization. However, in another subject who was observed after an interval of fourteen months, the reaction, which had been slightly positive, became negative. It is certain, then, that in some persons this type of sensitivity is persistent, perhaps in much the same way as a positive trichophytin reaction. Recognition of this fact carries certain practical implications. Inasmuch as the need for penicillin may arise at any time, it seems

logical to recommend desensitization to such patients. At the least, the patient should be informed of his sensitivity and advised to mention it to his attending physician whenever penicillin treatment should become necessary. The situation is analogous to that of the patient who is sensitive to horse serum and who may require serum therapy at some time.

It seems to us wise to perform a cutaneous test with penicillin on all patients for whom treatment with the drug is planned. Examples of these nonurgent indications are its use after an operation or when a course of aerosol penicillin is to be given for bronchiectasis. It might be well, too, to give the test even when penicillin must be started without delay because of an immediate indication, such as an acute infection. The test will serve at least as a warning and a guide if its reaction is positive. A negative reaction does not, of course, preclude the possible development of the induced form of urticarial sensitivity (group 1).

Active Stage.—The eruption occurring during penicillin treatment is reminiscent of the "id" of dermatophytosis.¹² Unlike the eruption in the induced form, the reaction can occur within the first day or two, even on first administration of penicillin. However, it may not occur until the eighth, or even the eleventh, day after the beginning of treatment. Severer degrees of latent sensitivity probably become manifest with smaller amounts of the drug.

All 7 subjects in this group had a positive reaction to the penicillin cutaneous test. The trichophytin reaction was likewise positive in each of these subjects. The much higher incidence of positive penicillin and trichophytin reactions in this group than in the group with the urticarial form of reaction is significant, as indicative of preexisting sensitivity and its relation to fungous disease.

In 1 subject the cutaneous reaction to penicillin remained positive for three months, or until desensitization was started. In another person, the reaction was still positive and unchanged after a six month interval. As was pointed out in the discussion on latent sensitivity, the reaction in 2 such patients was still strongly positive after more than a year. From these observations, it is our impression that the allergy to penicillin of this type is more persistent than the urticarial type. When a reaction has occurred, it may well occur again if the drug is given in full dosage.

The clinical management of this type of sensitivity requires more caution than that of type 1 sensitivity, because of its tendency to greater persistence and because the cutaneous reactions are likely to be severer. The danger of extensive exfoliation is to be borne in mind; pruritus is often intense. Fever and joint pains are absent, but edema, especially of the face and eyelids, is common in the severer grades of reaction. For these reasons, penicillin treatment usually must be stopped.

The decision to readminister penicillin should be guided at least in part by the cutaneous test and by the intensity of the previous eruption. If the reaction was strongly positive, or could be elicited with as little as 50 units, and, if the reaction was severe, it would be safest to desensitize the patient. If time does not permit desensitization, then the possibility of substitution of sulfadiazine for penicillin should be remembered. When the need for penicillin is urgent and the reaction only slightly positive, or, perhaps, when it is

12. It might be justifiable to refer to such eruptions as "penicillids," for the antigen eliciting them is penicillin, just as the trichophytid can be elicited by trichophytin.

not possible to await the result of the test, single provocative doses may be tried, or treatment may be started in low dosage.

When a patient has a history of this type of reaction, but the cutaneous reaction is found to be negative, it should be possible to proceed with treatment cautiously in low, and then ascending, doses. In such patients desensitization can probably be dispensed with.

METHODS AND RESULTS OF PENICILLIN DESENSITIZATION

As already indicated in the discussion on the management of cases of systemic penicillin allergy of both the urticarial and the erythematovesicular type, persons with either form may require desensitization in order to permit readministration of the drug. With type 1, the induced urticarial form, desensitization may seldom be needed, whereas with type 2, the erythematovesicular dermatitic form, it may have to be resorted to frequently.¹³

Desensitization was attempted in 8 patients. In 7 patients, desensitizing doses were given subcutaneously; with 1 the oral method was used. Any plan of desensitization implies treatment with graded increases in dosage kept below the reactive level of the patient's sensitivity. A positive cutaneous reaction offers a useful guide to desensitization. Successful desensitization is accompanied with conversion of the positive reaction to negative. When the reaction is negative to begin with, it is first of all necessary to establish that the patient is still sensitive. When this fact has been demonstrated, the patient's reactions must be employed as a guide to increases in dosage.

A typical average schedule of dosage for subcutaneous desensitization is given in table 3. The interval between injections, as well as the dosage, may be varied to some extent, depending on the degree of the sensitivity and the necessity for rapid desensitization. Thus, if the patient shows no reaction to 400 units intradermally, this amount can be used as the beginning dose. In some instances daily injections were given. We have found, however, that desensitization cannot be pushed too rapidly in most instances.

PATIENTS WITH NEGATIVE REACTIONS

In persons with urticaria whose reaction is negative, the question always arises whether sensitivity is still present. An attempt at reelicitation of the reaction is the only certain method of establishing this point beyond doubt. The dose and route of administration of penicillin for this purpose will depend, among other things, on the severity of the previous reaction, the time interval since it occurred and factors of convenience, such as whether the patient is in the hospital or is ambulatory. The most convenient form of oral administration is in form of tablets. Thus, a single dose of 50,000 units can be given on an empty stomach the first thing in the morning. If no reaction of any kind occurs, the dose might be repeated before bedtime. The next day either three or four tablets could be taken. On the third day, if no reaction has been observed, six tablets, or 300,000 units, could be given in divided doses.

When the previous reaction has been severe or when, for other reasons, it is of paramount importance to avoid all semblance of reaction, penicillin solution can

be given dropwise at first, and the doses, given in tablet form, may be increased slowly over several or many days. With such a technic, the efforts at reelicitation are, for all practical purposes, transformed into a method of desensitization. While it may be useful to proceed in this manner when time permits, the method does not actually disclose whether the patient retains his sensitivity or whether he can tolerate full therapeutic dosage without undue delay.

URTICARIA WITH A POSITIVE CUTANEOUS REACTION

In a young man a severe urticaria developed on the twelfth day after initiation of bronchoscopic instillation of penicillin. The reactions to the penicillin and trichophyton tests were positive. Intramuscular injections of even moderate amounts of penicillin caused local swellings and an increase in the eruption. The desensitizing injection could not be increased rapidly without pronounced local, and even general, reactions. The initial dose had to be as small as that given in table 3 and increased slowly, with the larger doses at intervals of three or four days. It took three months to increase from 400 to 20,000 units. Even in the next two weeks the dose could not be increased above 25,000 units, and the cutaneous reaction to 2,000 units was still positive, although reduced. In the following six

TABLE 3.—*Desensitization Schedule for Subcutaneous Administration*

Injection	Number of Units
1.....	200
2.....	400
3.....	800
4.....	1,200
5.....	1,600
6.....	2,000
7.....	2,500
8.....	3,000
9.....	5,000
10.....	10,000
11.....	15,000
12.....	20,000

The interval between injections may be two to three days. When more rapid desensitization is necessary, daily injections may be given. If the patient is extremely sensitive, the initial dose may be as low as 50 units, and subsequent increase in dosage much more cautiously tried. Should a local reaction or a rise in temperature occur after the increase in dosage, the subsequent dose is that which elicited no reaction, and increments should be smaller.

weeks, injections were continued at the convalescent home. For the last week or more of treatment, 30,000 and 35,000 units were given daily. At the end of that time, the cutaneous reaction had become negative to 2,000 units; the trichophyton test still caused a positive reaction. In an effort to evaluate the degree of desensitization, penicillin was administered orally in increasing dosage; 2,500,000 units were given altogether, as much as 600,000 daily without a cutaneous or other reaction.

Erythematovesicular Type.—Of our patients with type 2 sensitivity, 1 with successful desensitization permitting the therapeutic application of penicillin in effective dosage has been reported on previously.¹⁴ For that patient the subcutaneous method was also used, and took three weeks for completion. A follow-up report revealed that in four months after desensitization the patient was again able to tolerate penicillin well, this time in doses of 50,000 units every three hours intramuscularly for several days. He refused to have a repetition of the penicillin test at this time.

A parallel case is one in which subcutaneous desensitizing doses were given daily or every other day, requiring a month for reversal of the cutaneous reaction to penicillin to negative. Penicillin given orally in doses up to 600,000 units per day for two days then elicited no eruption.

13. Pillsbury, D. M.; Steiger, H. P., and Gibson, J. E.: The Management of Urticaria Due to Penicillin, *J. A. M. A.* 135:1255 (April 26) 1947.

14. Peck, S. M.; Siegal, S., and Bergamini, R.: Successful Desensitization in Penicillin Sensitivity, *J. A. M. A.* 134:1546 (Aug. 30) 1947.

Patients with Latent Sensitivity.—Desensitization of patients with a "spontaneous" positive cutaneous reaction to penicillin in the latent stage of type 2 sensitivity has been carried out successfully in 3 cases. In 1 case it was accomplished slowly over a six week period; injections were given every three to seven days, the patient being ambulatory. The cutaneous reaction remained negative thereafter over a follow-up period of eighteen months. Penicillin in oil and wax, 300,000 units, caused no reaction. This observation suggests, as does the experience with other patients, that this method when successful may result in permanent desensitization. However, it is possible that reactivation of fungous infection in the skin, or elsewhere, might reintroduce sensitivity.

In the second case, desensitization with production of a negative cutaneous reaction was accomplished by use of the same method in a four month period. However, retests eight months later showed a reversion to a moderately positive reaction to penicillin. Subcutaneous desensitization is being attempted again. In this instance, then, desensitization was temporary.

Desensitization had to be discontinued in 1 case because of mild general reactions, chiefly pruritus. However, the patient was uncooperative in the extreme.

Oral Desensitization.—In the third case desensitization was accomplished wholly by the oral route. Crystalline penicillin was first administered dropwise in a solution containing 5,000 units per cubic centimeter. In this way, small amounts, less than 1,000 units a day, can be given initially. This concentration was increased to 20,000 units per cubic centimeter. After three weeks tablets of crystalline potassium penicillin were given, at first 100,000 units a day, later as much as 500,000 units daily. The latter dose had to be decreased because of heartburn and headache and, when treatment was continued at 300,000 to 400,000 units daily reversal of the penicillin cutaneous test to negative resulted. In this patient a high degree of cutaneous sensitivity of the "spontaneous" type had been present both to penicillin G and penicillin X, the skin reacting with erythema to as little as 2 units, or 0.0012 mg., of crystalline sodium penicillin G.

Desensitization may be attended with great difficulty when there is an unusually high degree of latent penicillin sensitivity, as demonstrated by the quantitative graded penicillin cutaneous test. The difficulties of desensitization of an extremely sensitive patient with epidermal and anaphylactic reaction to penicillin were presented by O'Donovan and Klorfajn.¹⁵ They succeeded in partial desensitization by means of prolonged administration of penicillin in tablet form.

It is our clinical impression that in the patient with type 2 sensitivity desensitization cannot be rushed without the risk of unpleasant local or general reactions. Among patients with urticaria, it is possible that desensitization can be accomplished more quickly in those who are not extremely sensitive.

Therapeutic Desensitization.—When the need for penicillin is urgent, a modification of the usual technic is suggested, employing so-called therapeutic desensitization. Such patients should be under close observation, preferably in a hospital. After an initial provocative dose of from 1,000 to 5,000 units, depending on the degree of previously observed sensitivity, penicillin might be given every three hours in the same dose for the first twenty-four hours. Evidences of a reaction

should be looked for after each injection and before the next dose is given. On each day following, the dose can be increased until an adequate therapeutic dose is obtained. It is likely that the tendency to lose penicillin sensitivity spontaneously, which has already been noted as frequent among persons with type 1 sensitivity, can be hastened with judicious employment of this technic.

SUMMARY AND CONCLUSIONS

Four hundred and six adults and 93 children were tested with penicillin and trichophyton. The reaction to the forty-eight-hour cutaneous test with penicillin was observed to possess clinical significance and practical diagnostic value. The technic of performing and reading this test is described. Other tests are presented and discussed, but their reactions were not found significant.

Of 276 adults who had never had penicillin, 15, or 5.4 per cent, reacted "spontaneously" to the penicillin cutaneous test. Of 168 men, 11, or 6.5 per cent, reacted positively; of 108 women, 4, or 3.7 per cent, showed a positive reaction. Of 65 children, none reacted positively. The "spontaneous" reaction caused by penicillin sensitivity was three times as frequent among those patients who had a positive trichophyton reaction.

Of 130 patients who received penicillin, 32 had cutaneous eruptions. Of these eruptions, 25 were of the urticarial serum-sickness-like type; 7 were of the erythematovesicular, trichophytid type. In 34.2 per cent of all men eruptions developed, whereas they occurred in only 8.3 per cent of women.

In this group, all 17 positive reactions to penicillin cutaneous tests occurred in men, or 13.4 per cent of all patients.

Of the 25 patients in the group with urticaria 21 were men and 4, women. Of these patients, 10 had a positive reaction to the cutaneous penicillin test, and 4 had a positive trichophyton reaction; all were men. A previous instance of fungous disease is not considered to play a role in this form of induced sensitivity.

The 7 patients with the erythematovesicular type were men, each of whom had positive reactions to both the penicillin and the trichophyton test. The previous occurrence of fungous disease, which gave rise to penicillin sensitivity resulting in a "spontaneous" positive reaction to penicillin, is considered the basic mechanism of this type of sensitivity.

The delayed reaction to the penicillin cutaneous test is of practical value in the diagnosis of "spontaneous" sensitivity; it serves as an aid in preventing generalized eruptions prior to penicillin therapy and as a guide to dosage for desensitization.

Parenteral and oral methods of desensitization are described, and the results in 8 cases are presented.

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ABSTRACT OF DISCUSSION

DR. H. N. COLE, Cleveland: With every new drug, one of the first questions is what reactions follow its use. Only after a period of observation did the dangers from the use of the sulfonamide compounds begin to accumulate. Thus, it is timely that this problem be brought before the Section on Dermatology. Many physicians have seen evidences of sensitization from the use of penicillin. The earliest reactions were apparently of the localized type, due to intimate contact with the drug, and they affected nurses who mixed the prescribed doses for local injections, physicians who handled the drug and, more recently, a chemist and some industrial workers engaged in its manu-

15. O'Donovan, W. J., and Klorfajn, I.: Sensitivity to Penicillin: Anaphylaxis and Desensitization, *Lancet* 2: 444 (Sept. 28) 1946.

facture. Only later were the generalized systemic reactions studied, and by this time a large literature on the subject has accumulated. The reactions seem to be mostly of the (a) urticarial serum-sickness type, rarely accompanied with effusion into the joints, but with symptoms of the skin and mucous membranes resembling angioneurotic edema, and of the lungs resembling an acute attack of asthma and pulmonary edema; (b) erythematous eruptions on the skin, which rarely take on the characteristics of erythema multiforme or erythema nodosum, and which even more rarely progress into an exfoliating dermatitis. Occasional cases of fixed eruption have been observed. Thus far, cases of involvement of the hematopoietic system have, fortunately, been almost nonexistent, and this is not strange, for apparently penicillin does not involve the blood-forming organs. I am glad that Dr. Peck and his co-workers emphasized the use of an intradermal dose of 2,000 units, or about 1.2 mg., of crystalline penicillin in 0.1 cc. isotonic solution of sodium chloride, with the reaction read at the end of forty-eight hours, and that they brought out the fact that with a large dose a nonspecific reaction is possible. Their point is well taken that immediate intradermal tests are of no value and that the patch test is useful only in contact cases—when a dry patch test of 100,000 units amorphous penicillin should be employed. They also emphasized that a positive reaction to an intradermal test is helpful in confirming a diagnosis, while a negative reaction does not exclude it. The writers are to be commended for their emphasis on the fact that almost 5 per cent of 276 ward patients who had never received penicillin had a positive reaction after forty-eight hours to the intradermal cutaneous test and for their emphasis on its relation to a positive reaction to the trichophytin test and to the presence of a chronic dermatophytosis. Fungous infections may play a role in producing a sensitivity to penicillin.

DR. E. MYLES STANDISH, Hartford, Conn.: The clinical significance of the forty-eight hour penicillin test now seems to be definitely established. This work also substantiates the observations of other investigators of a definite relation between penicillin and trichophytin antigens. The mechanism of this reaction should receive further exploration. What happens to the trichophytin test in some of the positive penicillin reactors having negative reactions to trichophytin tests? Perhaps an explanation might come from the study of children who have had identified fungous disease. Normal children are negative to both tests. A 25 per cent expectancy of positive cutaneous reactions among adults from penicillin therapy seems high. One out of every 3 men have reactions, in contrast to only 1 of 30 children. Checks on these interesting prognostic observations should be made. That fungous disease plays little or no part in the induction of urticarial sensitivity is contradicted by the figures on children. Children have negative reactions to both tests and are relatively free from fungus. On the basis of the expectancy of urticaria in adults, about 18 per cent of children who had therapy should have positive reactions. There was but 1 child who showed penicillin sensitivity. The forty-eight hour test should be employed to gage the potentiality of reaction in all persons about to receive therapy who have a history of a fungous disease or who present significant fungous infection. Elective therapy should be delayed until the patient is desensitized, or else therapy should proceed with caution. Value lies in utilization of the drug during desensitization of persons who have a severe penicillin reaction. Desensitization should be carried out in the hospital, although oral desensitization apparently can be done outside the hospital. Dermatologists should apprise members of the medical profession of the dangerous potentialities of the many reactions. The dermatophytids, and possibly a generalized exfoliating dermatitis, might be prevented by employing this forty-eight hour test. I believe also in warning against shifting the type of penicillin therapy, except in case of extreme necessity and with all safeguards, when any of these dermatologic signs are present. Reactions are apparently decreasing since the shift to the use of crystalline penicillin was made. Since crystalline penicillin *per se* can sensitize persons, there may be an increase in positive reactors as the therapy proceeds, just as with sulfonamide therapy. When the antihistamine drugs and calcium gluconate fail, as they often

do, one should not hesitate to give procaine hydrochloride intravenously, but, of course, cautiously and only after a preliminary test. One's control in this administration is extremely delicate.

DR. HARRY M. ROBINSON, Baltimore: Dr. Peck and his associates have discussed the relation of the patch test and the intradermal test, principally the latter, to penicillin reactions. I should like to attack that problem by the hind-before method; that is, we discuss the inadvisability of using penicillin as a topical application, but no one warns the nurse or the pharmacist about protection against reactions occurring in preparation of the penicillin. Two of our nurses, which is a small number among the many nurses in our hospital who prepare this drug, had a serious dermatitis from preparing penicillin. If they had a disease requiring the administration of penicillin, I am afraid their reactions would be serious.

DR. LEON GOLDMAN, Cincinnati: I am sorry that Dr. Peck could not discuss the eczematoid contact phase because, as the other speakers have indicated, it is much more important for the dermatologist, and it also is, perhaps, a "cleaner" method of analysis than the intradermal test, for the patch test is easier to use and interpret. I should like to know how many of Dr. Peck's patients, especially those with the erythematovesicular phase, had eczematoid contact sensitivity, either potential or actual. Do his remarks about children and their fungous infections refer also to children who have had trichophytids associated with fungous infection of the scalp? I should like to ask whether any synthetic penicillin has been available for cutaneous testing, and whether it would help to clear up some of these problems. Of course, the difficulty for the practicing physician, as Dr. R. L. Kile mentioned the other day, is that he cannot wait until the tuberculin type of reaction becomes evident; he is asked for an opinion when penicillin is needed as an emergency measure. If the immediate erythema-edema reaction could be developed to be specific, it would be of great practical value.

DR. E. E. MANDEL, Chicago: Permit me to relate briefly the apparently unique case of a girl $3\frac{1}{2}$ years of age in whom a systemic sensitivity reaction developed more than three weeks after the administration of penicillin in oil and wax, which constituted her first contact with this antibiotic substance. She had received 150,000 units of the Romansky preparation daily for three days because of a severe infection of the upper respiratory tract. Recovery was prompt. About one week after the first injection, painful infiltrated lesions at the sites of the injections developed, which subsided slowly. Twenty-two days after the last injection of penicillin in oil and wax, an acute illness set in, characterized by urticaria, adenopathy and fever, and eosinophilia (24 per cent), with a total white cell count of 10,000 per cubic millimeter and a fairly normal red cell count. After six days of severe malaise and itching, this illness gradually subsided. It was undoubtedly severer and lasted longer than the original disease for which the child had received penicillin. Two months later, she was subjected to scratch tests with white wax U. S. P. and peanut oil supplied by the company which had manufactured the penicillin preparation she had received. She was given scratch tests with that same penicillin preparation and with an aqueous solution of 15,000 units of penicillin per cubic centimeter; she was also tested with this solution intradermally. No reaction was observed. Nevertheless, there can be little doubt that the allergic disease as described was a response to the medication. The child had never before shown any sign of allergy, nor did she receive, either during or preceding that episode any other medication, except for acetylsalicylic acid and diphenhydramine hydrochloride, both of which afforded some relief. A thorough search of the pertinent literature revealed only 1 case of penicillin sensitivity; it was first noticed about twenty days after the last administration of the drug. The patient was an adult and an aqueous solution of penicillin was used (Kolodny, M. H., and Denhoff, E.: Reactions in Penicillin Therapy, *J. A. M. A.* 130: 1058 [April 20] 1946). Administration of penicillin in oil and wax is followed by untoward reactions so frequently in pediatric experience that some pediatricians refuse to employ it. No other case of such delay in the systemic reaction however, has come

to my attention. Systemic sensitization may have developed here at the time of the local reaction over the sites of injections.

DR. MARION B. SULZBERGER, New York: Any one who has been privileged to study and to participate in the work on the immunology of fungi and their extracts must come to the realization that the advances which have been made were in the main due to studies by dermatologists. It is, therefore, comprehensible that dermatologists again have led to the better understanding of the immunology of penicillin reactions. These recent advances are all based on earlier studies with allergenic fungi and logically come from that group of investigators which best understands the methods and the problems of fungous immunology—in other words, from the dermatologic immunologists. The mechanism of these untoward reactions to penicillin has been largely elucidated by the studies of well trained dermatimmunologists, as represented by the capable Dr. Peck and his group. All down the line the resemblance between trichophyton hypersensitivity and its manifestations and penicillin hypersensitivity and its manifestations is almost uncanny. The pictures can be transposed or superimposed without one's being able to distinguish between them so far as the type of cutaneous reaction is concerned. The untoward manifestations which penicillin causes, the *erythema-multiforme-like reactions*, the *urticarias*, the *morbilliform reactions*, the *fevers*, the *glandular swellings*, the *arthritides* and, most important, the *eczematous form of reaction* exemplified in the "id" type of response, have all long ago been carefully and well described in relation to pathogenic cutaneous fungi and recognized as due to trichophyton hypersensitivity. Moreover, the fact that immediate urticarial reactions are rare with penicillin provides another resemblance to the trichophyton test. There, too, with the exception of certain species of fungi (*Trichophyton purpureum*), as Dr. George M. Lewis and his co-workers have shown), the urticarial reaction is generally absent in cutaneous test, whereas the forty-eight to seventy-two hour delayed type and the *eczematous form of reactions* are commonly present. Now, Dr. Peck comes forward with another analogy. As Dr. Fred Wise and I were first able to show in 1932 (*Ringworm and Trichophyton: Newer Developments, Including Practical and Theoretical Considerations*, J. A. M. A. 99:1759 [Nov. 19] 1932), one can reduce the threshold of cutaneous sensitivity to the *eczematous or eczematoid type of trichophyton reactions* by repeated intracutaneous injections of trichophyton. Dr. Peck now shows for the first time that one can do that also with penicillin in the delayed type of penicillin cutaneous reactions. Another new fact emerges from this study, namely, the high incidence of cutaneous reactions to penicillin in men as compared with that in women.

DR. SHEPPARD SIEGAL, New York: I want to thank the discussants for their stimulating remarks concerning our paper. In reply to Dr. Goldman, we had just 3 instances of reaction in children, each of the urticarial type. He is correct in pointing out the practical difficulty of using a test which does not show a positive reaction until twenty-four or forty-eight hours later to a drug that often is needed immediately. We stress the value of the test when the patient has had a previous reaction and one wants to know whether he is still sensitive, or, for example, when one wishes to know beforehand whether the patient falls into the group with spontaneous sensitivity. When therapy must be started immediately, it might still be worth while to do the cutaneous test, for it may serve as a guide to reactions that may arise subsequently. I note Dr. Peck did not have time to mention one or two other things concerning spontaneous sensitivity and the delayed cutaneous reaction to penicillin. First, spontaneous sensitivity, apparently, lasts a long time. For example, we had at least 2 patients whom we tested after intervals of twelve and eighteen months, respectively, and they still had a strongly positive cutaneous reaction to penicillin. Desensitization, in some instances at least, is successful not only temporarily but over a long period. For example, 2 patients whom we desensitized were again tested several months later and were found to have a negative cutaneous reaction. One of them was still able to take large doses of penicillin several months after we had successfully desensitized him. Here, again, I want to emphasize that I am talking about a patient with type 2 sensitivity with the erythematovesicular form of reaction.

We have seen some severe reactions following administration of penicillin in oil and wax, characterized chiefly by an intense local, almost cellulitic, response, with marked induration of the buttocks, often associated with fever and sometimes with urticaria. This form is probably related to the type 1 reactions we have described. It occurs after a delayed incubation period, and often without an associated positive cutaneous reaction to penicillin, whether of the delayed or the immediate type. Another point I should like to emphasize is that reactions occur whether the penicillin is given orally, by inhalation or by injection. In 1 of our patients who had received penicillin by aerosol, a severe generalized urticaria developed about nine days after the inhalation therapy, while another patient responded promptly with a generalized erythematovesicular reaction, just as in patients after intramuscular injection.

STREPTOMYCIN IN TOPICAL THERAPY

I. Its Sensitizing Property

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and
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Up to the present time streptomycin has not been used topically as extensively as penicillin, chiefly because of the limitations, expense and availability. Perhaps, also, the reactions from topically administered penicillin, after the initial enthusiasm, may be another factor in determining the reluctance to use streptomycin topically. In the field of dermatology, streptomycin has been used topically by Sulzberger and Baer,¹ Calloway² and Senturia and Broh-Kahn.³ There have been a few reports of the reactions from topically employed streptomycin. These reports have been infrequent also perhaps because of infrequent use. Nichols and Herrell⁴ indicated that contact dermatitis may result in those handling streptomycin. A case was reported by Feldman,⁵ in which an eczematous type of sensitivity was proved in patch tests to be due to the streptomycin. Strauss and Warring⁶ reported 4 cases of clinical epidermal sensitivity to streptomycin and 2 additional cases of subclinical but demonstrable sensitization proved by patch tests. These instances of sensitization occurred in a group of 12 nurses who came into contact with the drug while they were preparing solutions for administration to patients with tuberculosis.

In an effort to evaluate the actual and potential sensitizing qualities of streptomycin, a series of testing techniques were used. Patients were subjected to patch tests to streptomycin ointment of 5,000 units per gram in a cream base. The ointment was considered stable at room temperature for several weeks. A number of these patients were given repeat tests in two weeks. Of the first series, 48 were Negro, and of the second series 20 were Negro. Eight patients of the first series had received parenteral streptomycin therapy.

In an effort also to duplicate the conditions under which penicillin was studied, a certain number of

Dr. Feldman is a Bristol Fellow in Antibiotics. The streptomycin ointment was furnished by Bristol Laboratories, Inc. From the Department of Dermatology and Syphilology of the College of Medicine of the University of Cincinnati.

1. Sulzberger, M. B., and Baer, R. A.: *Yearbook of Dermatology and Syphilology*, Chicago, The Year Book Publishers, 1947, p. 15.

2. Calloway, J. L.: *Pseudomonas Aeruginosa Infection of the Ear Treated with Streptomycin*, Arch. Dermat. & Syph. 55:257 (Feb.) 1947.

3. Senturia, B. H., and Broh-Kahn, R. H.: *The Use of Streptomycin in the Treatment of Diffuse External Otitis*, Ann. Otol., Rhin. & Laryng. 56:81 (March) 1947.

4. Nichols, D. R., and Herrell, W. E.: *Streptomycin: Its Clinical Uses and Limitations*, J.A.M.A. 132:200 (Sept. 28) 1946.

5. Feldman, M. D.: *Contact Dermatitis from the Topical Application of Streptomycin Ointment*, to be published.

6. Strauss, M. J., and Warring, F. C., Jr.: *Contact Dermatitis from Streptomycin*, J. Invest. Dermat. 9:3 (July) 1947; *Epidermal Sensitization to Streptomycin*, ibid. 9:99 (Aug.) 1947.

mucous membrane tests were done, both of the buccal mucosa and the vaginal mucosa. The vaginal mucosa tests were done because of the investigative work on the use of suppositories containing penicillin by Goldman and Feldman.⁷

Because of previous work with the artificial induction of penicillin dermatitis on the face, some experiments were done in a similar manner with streptomycin.

From these preliminary investigative studies of a small series of patients, it appears that streptomycin is a poor sensitizing agent and perhaps much less active than penicillin.

Does clinical experience bear out these investigative studies? In our series of almost 300 patients treated with streptomycin ointment, there have been 3 cases of eczematous contact hypersensitivity proved by patch tests. The condition was suspected in an additional case, but patch tests were not done.

REPORT OF CASES

CASE 1.—An elderly white woman was hospitalized because of stasis dermatitis on which was superimposed secondarily infected erosions and ulcerations. She was treated with streptomycin ointment dressings daily and showed initial improvement. However, on about the twelfth day of treatment, there appeared severe eczematoid dermatitis on the cutaneous areas where the ointment had been used. Reactions to patch tests with both streptomycin ointment and solution were strongly positive.

CASE 2.—A young white man was seen in the hospital because of chancroid pyoderma affecting the arm. Previous treatment, consisting of compresses and application of ammoniated mercury ointment, were of no avail, and streptomycin ointment was prescribed. When this had been used about four or five days, there appeared acute erythematous, edematous and vesicular dermatitis about the margin of the ulcer. Streptomycin therapy was discontinued, and patch tests were performed. The reactions were strongly positive to both streptomycin oint-

TABLE 1.—Results of Patch Tests with Streptomycin Ointment, 5,000 Units per Gram

Total Number of Patients	Reaction to First Test		Total Number of Patients	Reaction to Retesting in Two Weeks	
	Positive	Negative		Positive	Negative
212	0	212	129	0	129

TABLE 2.—Results of Buccal Mucosa Contact Tests with Streptomycin Powder

Number of Patients	Hours of Contact	Reactions	
		Positive	Negative
7	2	0	7
7	4	0	7
12	12-14	0	12

ment and streptomycin solution. Reactions to patch tests with penicillin were also positive; however, the drug was later given parenterally without reaction. The penicillin contact tests were not repeated.

CASE 3.—A middle-aged white woman with otitis externa was treated with streptomycin ointment. After a short while the dermatitis flared, and the skin of the eyelids, genitalia, arms and buttocks was involved with contact dermatitis. Reactions to patch tests with streptomycin were strongly positive.

Therefore, there are 3 proved cases in a total of almost 300. As topical streptomycin therapy is con-

tinued for longer periods of time, it is probable that more cases will be found.

An additional case which is not included in this series was that of a nurse in whom severe generalized dermatitis developed from streptomycin administered to patients. Her course was prolonged, and attempts at hypsensitization were difficult, for as little as 10 units would give a focal reaction also.

TABLE 3.—Results of Vaginal Mucosa Contact Tests with Streptomycin Ointment Containing 5,000 Units per Gram

Number of Patients	Hours of Contact	Reactions	
		Positive	Negative
6	1 hour twice a day for 48 hours	0	6
10	48 hours (cont.)	0	19

TABLE 4.—Results of Facial Sensitization Attempts with Streptomycin Ointment Containing 5,000 Units per Gram

Number of Patients	Applications to Face		Reactions	
	No. per Day	Total Days	Positive	Negative
17	3-4	5-24	0	17

COMMENT

To date, streptomycin ointment has been observed to be of value in superficial infections with organisms which are sensitive to the drug. These types of infections include, of course, impetigo, pustular folliculitis, ecthyma and nonfungous external otitis. In general, the principles of topical streptomycin therapy parallel those for topical penicillin therapy as detailed by Goldman, Suskind and Friend.⁸

If it is established that streptomycin administered topically is less sensitizing than penicillin administered topically, then streptomycin would be preferred when topical therapy with antibiotics is desired. Moreover, the chances are certainly less of subsequent parenteral use of streptomycin than of penicillin. Tyrothricin, used topically, in our opinion, is a much less active antibiotic. This, too, can occasionally produce local reactions.⁹ Certainly, more comparative and critical trials of the various antibiotics, the older and tried and the newer chemotherapeutic agents for the topical therapy of superficial infections of the skin, are needed.

CONCLUSIONS

Results of preliminary investigative work from clinical trial, patch tests and tests of the buccal and vaginal mucosa, indicate that topically administered streptomycin is a sensitizing agent and that it is perhaps less sensitizing than topically administered penicillin. Three proved cases of eczematous hypersensitivity to topical streptomycin and one case of severe dermatitis in a nurse are reported from our clinical series. The frequency and severity of this type of reaction to streptomycin will be determined by greater experience.

Preliminary clinical investigative studies in almost 300 cases indicate that stable ointment preparations of streptomycin are effective in the treatment of superficial pyogenic infections.

8. Goldman, L.; Suskind, R. R., and Friend, F.: II. The Principles of Local Therapy with Penicillin Ointment Mixtures, *Arch. Dermat. & Syph.* 55:793 (June) 1947.

9. Feldman, M. D.; Goldman, L., and Altemeir, W. A.: Polyvalent Eczematous Hypersensitivity to Various Antibiotics Induced by Topical Tyrothricin, to be published.

7. Goldman, L., and Feldman, M. D.: Contact Testing of the Vagina with Vaginal Suppositories Containing Penicillin, *J. Invest. Dermat.* 9:155 (Sept.) 1947.

HUMAN PARABIOTIC PYGOPAGUS TWINS WITH HYPERTENSION

Report of a Case with Clinical, Psychologic and
Endocrinologic Observations

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Pygopagy, the state of twins being conjoined at the sacrum, has been reported in human beings on an average of three times a century since 1100 A.D.¹ Nature thus provides a rare occasion for studying humoral influences, transmitted from one twin to the other through communicating circulations. Observations are feasible on the humoral transmission of substances influencing the emotional state, of glandular secretions and of disease in situations where one of the twins is afflicted. Margaret and Mary provided a unique situation, for Margaret had grade 2 hypertension, while Mary had labile hypertension, normal at rest. Margaret also had bladder calculi and a uterine leiomyoma. The rarity of observations on human conjoined twins, the anatomic and physiologic knowledge acquired from such a study and the significance of our observations relative to the similarity or dissimilarity of pygopagus twins have prompted us to write this report.

REPORT OF A CASE

Margaret and Mary, aged 34 years, conjoined at the sacrum, entered the New England Deaconess Hospital Dec. 3, 1946. Mary (right in figure 1A, left in figure 1B) was asymptomatic, while Margaret had hypertension, which had been discovered first five months previously, and complained of urinary frequency, which had been present intermittently for years, and pain in the lower part of the abdomen, which was mild, constant and not related to bowel, urinary or menstrual functions.

At birth, the twins' combined weight was 7 pounds (about 3,175 Gm.). Delivery was uncomplicated, but two months pre-

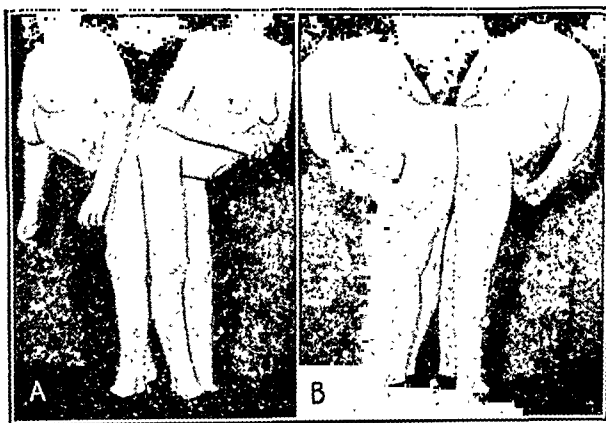


Fig. 1.—A, anterior view of the pygopagus twins, with Mary on the left and Margaret on the right. B, posterior view.

mature according to their mother. She denied having had any illness while carrying them, and her only other pregnancy resulted in a normal child ten years later. Details regarding the mechanism of labor or structure of the placenta were unobtainable.

At the age of 3 the twins entered the Boston Children's Hospital,² where operation to separate them was considered, but not done since it was found that their spinal canals communicated. At this time a "systolic blow" was detected in Margaret's heart. During childhood they had mumps, measles, pertussis and chickenpox at the same time. They were instructed by private tutors and, when older, traveled widely with circuses. At 21, Margaret's intravenous pyelogram showed renal calculi



Fig. 2.—Roentgenograms of the twin's juncture (Mary on the right and Margaret on the left).

on the right side. Two months later, at the Peter Bent Brigham Hospital,³ a cystoscopic examination with retrograde pyelograms showed no calculi, but demonstrated mild cystitis and narrowing of the urethra, requiring dilation. Margaret's blood pressure was 150 mm. systolic and 90 mm. diastolic, and Mary's was 150 mm. systolic and 94 mm. diastolic. The temperature charts made during both of these hospital sojourns, one in infancy and the other in adulthood, reveal identical curves in both sisters. Menarche and menstruation were similar in each as far as could be determined in view of the difficulty of telling which sister was menstruating, since there was practically a common vagina. Their mother stated that they started to menstruate at the age of 13 and that they have only one period a month, sometimes lasting four to five days and occasionally nine to ten days. Only Margaret has any menstrual discomfort, and this is mild.

The family history is not contributory except that their mother has hypertension with systolic pressure up to 240 mm. of mercury.

Their union resulted from fusion of anomalous sacral bones, as shown in figure 2, and of perineums, the surface anatomy of which appears in figure 3. The urethras were located $\frac{1}{2}$ inch (about 1.3 cm.) apart; vaginal openings were barely separated by a thin septum, with the medial labia absent and the lateral set fused, and the anus was a single orifice. Roentgenologic studies after an enema with barium sulfate showed separate sigmoid colons entering the common rectum 3 inches (about 7.5 cm.) above the anus. A pelvic examination performed under anesthesia demonstrated separate uteri. Tests for cutaneous sensation in the immediate vicinity of the junction between them were perceived by both. In standing, Margaret's trunk inclined to the left and Mary's to the right. This position caused the outer arm and breast of each to hang in a more dependent position than its fellow and may account for the larger size of these outer appendages.

Margaret was thin, high strung and apprehensive, while her sister was stout, calm and placid. Their mother stated that they had always been different; Margaret was usually concerned about her health and finances, and Mary was easy going

Dr. Younghusband is a Fellow in Internal Medicine.
From the Department of Internal Medicine, The Lahey Clinic.

1. Gould, G. M., and Pyle, W. L.: *Anomalies and Curiosities of Medicine*, Philadelphia, W. B. Saunders Co., 1901.

2. Information was obtained through Dr. Charles Brugler, Superintendent of the Children's Hospital, Boston.

3. Information was obtained through Dr. Norbert Wilhelm, Superintendent of the Peter Bent Brigham Hospital, Boston.

The only other abnormal physical observations of note were a small leiomyoma of the uterus and grade 2 apical systolic murmur in Margaret and hypertension in both. No signs of a leiomyoma were observed clinically in Mary. Figure 4 is a chart of their blood pressure readings recorded by nurses every three hours for ten days and is representative of the behavior of their blood pressures during the entire period of hospitaliza-

The results of the following laboratory tests were normal and similar in each sister: urinalysis, blood cell counts, chemical determinations in the blood for sugar, nonprotein nitrogen, cholesterol, calcium, alkaline and acid phosphates, phosphorus and renin;⁴ results of serologic tests for syphilis, electrocardiograms, electroencephalograms and roentgenograms of the chest were also normal. Arm to tongue circulation time with triketocholanic acid ("decholin") was 15 seconds for Margaret and 8 for Mary.

Figure 1 consists of four line graphs. The top-left graph shows Blood Pressure (mm Hg) over 11 days (9 AM, 10 PM, 11 AM, 11 PM). The bottom-left graph shows Temperature (°C) over 7 days (13, 14, 15, 16, 17, 18, 19). The top-right graph shows ETAMON test results for Margaret (3 cc) and Mary (3 cc) over 7 minutes, with positions: Basal, Sitting, Standing, Lying. The bottom-right graph shows ETAMON test results for Margaret (3 cc) and Mary (3 cc) over 7 minutes, with positions: Basal, Sitting, Standing, Lying.

Tests for renal function showed impairment in Margaret, as is shown in the results summarized in the table. In performing the phenolsulfonphthalein test, urine samples were obtained by catheter from each bladder.

4. Reported by Dr. Lewis Dexter, Peter Bent Brigham Hospital, Boston.

After 30 cc. of iodopyracet injection was given intravenously to Margaret the renal calices were not visualized by roentgenogram, and the bladder showed only poor concentration of the dye, while Mary's calices and bladder on the right side were well visualized. Later the same amount of iodopyracet injection administered to Mary gave good visualization of Mary's bladder and barely outlined Margaret's bladder. Two calculi, approximately 2.5 cm. in diameter, were discovered in the latter's bladder. While Margaret, with the severer hypertension, had some impairment of her renal function, her urinary urea and sodium chloride estimations proved that she was not dependent on Mary's kidneys.

A cystoscopic examination by Dr. Howard Trafton revealed Margaret's urethra to be narrowed, and dilation was required. The bladder was mildly inflamed. The stones were removed by crushing and were observed to be composed of urates and oxalates.

Whether to attempt surgical separation of the twins was settled by their flat refusal even to consider this. They had become so adjusted to being joined together that separation was unthinkable. In their opinion this would be no less than amputation of a personal appendage. The members of the orthopedic and surgical departments agreed that surgical separation was not feasible, because insurmountable difficulties would be met in the lumbosacral region where the spinal canals were known to communicate. Probable damage to a common cauda equina would result in complications of the bowel and bladder of a serious nature. Furthermore, colostomy in one, and probably in both, would be necessary, because of the single rectum. Should one die, however, operation would be urgent to save the life of the other. The neurosurgical consultant expressed the belief that it would be possible to perform a splanchnicectomy on Margaret if such were indicated for relief of hypertension.

COMMENT

Evidence for intercommunication of the sisters' vascular systems was obtained from the simultaneous excretion from both of phenolsulfonphthalein and iodopyracet injection. The degree of this vascular exchange was not exactly determined, but appeared to be moderate in view of the concentration of dye materials in the opposite twin. Had tagged red blood cells been available, this could have been quantitated.

That factors other than humoral transmission predominate and that humoral influences play little or no part in mediating emotional states are brought out by the diametrically opposite temperaments and reactions of the twins. They both had similar environments. That one was tense, aggressive and worrisome and the other passive and phlegmatic would seem to depend on hereditary factors, such as caused one to be round faced and the other long faced.

Other pygopagi, as the Siamese twins and the Blazek sisters,⁵ also showed definite differences in physique and temperament, lending support to the hypothesis that they were derived from two ova and hence dissimilar twins rather than having originated from maldevelopment of a single ovum. On the other hand it is difficult to see why they become attached so symmetrically, as sacrum to sacrum rather than, say, sacrum to shoulder, if fusion results merely from proximity in utero of the two fetuses, or why such twins always have the same sex unless they arise from a single ovum. The pathogenesis remains unknown and awaits further observation. More details regarding placentas are especially important since such information is lacking in most reported cases.

That menstruation began in both at the same age and continued to occur practically simultaneously

requires explanation, for at first glance it would be expected that, since each had a pituitary gland, there would be different menstrual cycles at one time or another. The self-regulatory effect of ovarian hormones acting on the pituitary gland, however, may explain this menstrual similarity. Follicular stimulating hormone causes production of estrogen, which in turn inhibits further follicular stimulating hormone secretion, while stimulating secretion of pituitary luteinizing hormone. The latter causes outpouring of progesterone from the corpora lutea, which in turn inhibits further luteinizing hormone production, but also apparently stimulates secretion of follicular stimulating hormone. Because of intercommunicating circulations between the twins, each of their pituitary glands is under the control of this system, so that they probably behave as if only a single mass of pituitary tissue were present.⁶

Should one of the sisters require bilateral oophorectomy or have natural menopause before the other, the situation would resemble that of parabiotic rats when one is castrated and the other left intact. Under the stimulus of castration the pituitary gland of the castrated animal hypersecreted and the excessive gonadotropic hormones stimulate the ovaries of the intact animal to increased estrogen production, causing continuous estrus and adrenal hyperplasia in the intact animal. If estradiol is given to the castrated animal, the gonadotropic secretion of the pituitary gland is inhibited, so that excessive estrogen is not produced.⁷

In a report on another set of pygopus twins,⁸ when one became pregnant both developed increased pigmentation, and both lactated, the aunt more than the mother, indicating exchange of pituitary hormones.

The presence of a leiomyoma in Margaret and not in Mary does not necessarily prove or disprove that ovarian hormones are causal, for it is likely that the concentration of hormones in each is different. The interchange of ovarian secretions between the twins is not as simple as the exchange of dyes, for ovarian substances are apparently rapidly removed from the blood stream, especially by the liver. Furthermore it is likely that there are differences in sensitivity of end organs and in the presence or absence of a leiomyoma anlage.

The similarity of Margaret's and Mary's temperature charts, not only during the present hospital sojourn, but also during hospitalization at ages 3 and 21, allows the conclusion that substances affecting temperature control are disseminated by way of the blood stream, at least during localized infections such as cystitis.

The close parallelism of the blood pressure curves has two possible explanations, either as humoral transmission of pressor substances affecting both twins quantitatively, or as identical responses to environmental influences. There was no evidence to favor one over the other. The absence of crossed effect from the cold pressor test was expected with this test, as vasomotor reflexes rather than chemical changes are responsible for changes in blood pressure and the twins had no demonstrable intercommunication of autonomic nerves. In the mecholyl and sodium isoamylethylbarbiturate tests, lack of crossed effect is best explained by such rapid removal of the drugs from the blood that little or none reached the other twin. The greater effect of

6. Hurxthal, L. M.: Personal communication to the authors.

7. Meyer, R. K., and Biddulph, C.: The Influence of Estradiol on the Secretion of Gonadotrophic Hormone in Adult Parabiotic Rats, *Am. J. Physiol.* 134: 141-146 (Aug.) 1941. Pinto, R. M.: Interrelations of Adrenal and Sex Glands in Parabiotic Rats, *ibid.* 144: 652-657 (Oct.) 1945.

5. Perlstein, M. A., and LeCount, E. R.: The History and Necropsy Report of the Bohemian Twins, Rosa-Josepha Blazek, *Arch. Path.* 3: 171-192 (Feb.) 1927.

tetraethyl ammonium chloride on Margaret, even when administered only to Mary, indicates increased vaso-motor tone of the more hypertensive sister.

In physiologic experiments⁸ when 1 of 2 parabiotic rats is rendered hypertensive, the co-twin may also have a rise in blood pressure, but fails to have an exactly identical increase and in some cases fails to have any rise. Presumably, there is a difference of concentration of "pressor" or "antipressor" substances between the 2, owing, possibly, to rapid removal of these substances from the circulation before they have a chance to pass from one to the other. Grollman and Rule⁸ observed that hypertension results from removal of two or three kidneys from parabiotic rats and concluded that deficiency of an "antipressor" generated by the kidneys is the cause of hypertension in these cases.

Several hypotheses are possible to explain the hypertension in our twins. It could well be hereditary, since their mother has elevated blood pressure, or it may be secondary to chronic renal infection, on the basis of Margaret's renal and vesical calculi and past history of pyuria, with "pressor" substances carried to both twins by way of the circulation, or from deficient production of "antipressor" substance by Margaret's diseased kidneys. The more exaggerated response to tetraethyl ammonium chloride by Margaret, the hyperkinetic twin, proves her vasomotor tonus and lends support to Selye's⁹ theory of psychic stimulation of the adrenals. Mary's blood pressure was of lesser degree because neither the psychic nor renal factors pertained in her case. It might be conjectured that Mary's milder hypertension was entirely due to a transport of "pressor" substances from her more hypertensive sister. While it is possible that Margaret had deficiency of "antipressor" substances from renal damage, there is no reason to suspect this in Mary, so that the presence of a "pressor" substance, which would be transmittable, is more likely than deficiency of "antipressor," which would not be transmissible. The demonstration of a small amount of renin in the blood of both twins supports the theory of a transport of a "pressor" substance from Margaret to Mary.

It is significant that the sister with the higher blood pressure was also the more hyperkinetic one and furnishes evidence for the presence of psychosomatic elements in hypertension.

SUMMARY AND CONCLUSIONS

Clinical observations on a hitherto unreported set of pygopus twins furnish grounds that such anomalies originate from two separate ova rather than, as frequently supposed, from a maldeveloped single ovum. There are data to confirm the transportation of female sex hormones by the blood stream and to show humoral transmission of temperature-elevating substances in fevers associated with infections. Emotional states appear not to be mediated by way of the circulation. The parallelism of their blood pressure curves suggests a humoral control, but may have been from similar response to environmental factors. Their hypertension appeared to be due to a combination of heredity, chronic renal infection, chronic anxiety and nervous tension factors, with renal and tension factors predominating in Margaret and hereditary and humoral factors in Mary.

8. Grollman, A., and Rule, C.: Experimentally Induced Hypertension in Parabiotic Rats, *Am. J. Physiol.* **138**: 587-592 (March) 1943.
9. Selye, H. L.: General Adaptation Syndrome and the Diseases of Adaptation, *J. Clin. Endocrinol.* **6**: 117-230 (Feb.) 1946.

SYMPTOMS MASKED OR MODIFIED BY CHEMOTHERAPY

The Increasing Responsibility of the Roentgenologist

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In a recent ward round, the Chief of the Surgical Service of the University of Virginia Hospital remarked, "Since the advent of chemotherapy, the sections of textbooks dealing with the diagnosis of infection must be rewritten." With the widespread use of chemotherapy in any illness remotely suggesting infection, few patients fail to receive one of the newer chemotherapeutic remedies. It is the almost universal experience of physicians in the larger reference institutions that an increasing number of patients are seen in whom the classical symptoms of disease are masked or modified by previous chemotherapy. The correct diagnosis of disease, or the proper evaluation of progression or regression of pathologic processes, even after the diagnosis has been established, has become much more difficult. The roentgenologist, therefore, since he interprets pathologic changes as depicted on his films, must assume more and more responsibility with respect to the proper treatment of the patient, disregarding in large part, classical symptomatology.

Several reports dealing with single cases of infection or of one or more diseases, with masked symptoms have appeared in the recent literature. Labby¹ reported a case of recurrent pneumococcal meningitis following treatment with sulfonamide compounds. Weinstein and Atherton² reported sinus phlebitis occurring during treatment of acute suppurative otitis media with no clinical signs of mastoiditis. Riley³ as quoted by Rothman, reported a case of acute appendicitis treated by full sulfadiazine dose for seventy-six hours at sea with complete masking of symptoms, with acute appendicitis at operation. Rothman⁴ summarized the literature through 1945, stressing the recurrence of symptoms following cessation of chemotherapy. Christie and Wyatt⁵ in 1946 stressed the changes in roentgenologic diagnostic criteria, presenting several cases of osteomyelitis and 1 of perinephritic abscess.

During the past few years the members of the Department of Roentgenology of the University of Virginia Hospital have been impressed by the increasing number of patients with diagnostic difficulties following chemotherapy, in whom the symptoms did not fit in with the roentgen findings. This has been particularly true in surgical complications resulting from pneumonia. Abscess of the lung and infected bronchiectasis offer many such difficulties, and it is our impression that there is a definite increase in these complications following chemotherapy. Possibly this may be explained

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1. Labby, D. H.: Recurrent Pneumococcal Meningitis Following Sulfonamide Therapy, *J. A. M. A.* **127**: 981 (April 14) 1945.

2. Weinstein, S., and Atherton, H. B.: The Treatment of Acute Suppurative Otitis Media with Penicillin, *J. A. M. A.* **129**: 503 (Oct. 13) 1945.

3. Riley, C. M.: Atlantic Fleet M. News Letter, Dec. 10, 1944, no. 12-44; cited by Rothman.⁴

4. Rothman, P. E.: Recurrence of Infection Following Therapy with Sulfonamide Compounds and Penicillin, *Am. J. Dis. Child.* **72**: 415 (Oct.) 1946.

5. Christie, A. D., and Wyatt, G. M.: Changes in Roentgenologic Diagnostic Criteria Resulting from Chemotherapy, *J. A. M. A.* **132**: 895 (Dec. 14) 1946.

by the relative lack of liquefaction of bronchial secretion as demonstrated in experimental animals.⁶

Without resort to statistical data, illustrative cases of varied conditions are presented, with symptoms and signs at variance with the roentgenologic and operative findings.

REPORT OF CASES

CASE 1.—For ten months, M. F., a woman aged 70 years, had intermittent attacks of fever and abdominal cramps, accompanied by a watery diarrhea with mucus and traces of fresh blood. A barium enema revealed an obstruction in the sigmoid colon, with diverticula proximal to the obstruction. When she was treated for diverticulitis by colonic rest, the obstruction was quickly relieved. A five day course of sulfadiazine resulted in complete disappearance of fever, diarrhea and discomfort. Two weeks after discontinuance of the drug, symptoms returned in more severe form. Again, a barium enema demonstrated pronounced diverticulitis, and again sulfadiazine produced relief.



Fig. 1 (case 1).—Carcinoma of the sigmoid, discovery of which was delayed by response to sulfadiazine therapy of an earlier demonstrated sigmoid diverticulitis.

Subsequent episodes in the next two months did not respond so well and a pelvic mass was discovered. Barium enema then (fig. 1) showed a tumor of the sigmoid colon as well as diverticulitis. At laparotomy, a large cancer of the sigmoid colon was found, invading the bladder.

Comment.—In this case, the response of diverticulitis of the sigmoid colon to sulfadiazine delayed discovery of a carcinoma of the sigmoid colon.

CASE 2.—D. R. V., one of a pair of premature twins, had omphalitis and an infection of the blood stream with *Staphylococcus aureus* in its second week of life. With penicillin, the omphalitis promptly cleared up and in ten days blood cultures were negative, but penicillin was continued for another week. Ten days later, diarrhea developed. It was treated by Murphy drip and sulfadiazine. While sulfadiazine was being given, infection developed at the site of insertion of a bone marrow drip needle. Administration of penicillin was again started. The infection of the bone spread, a pathologic fracture occurred,

but healing was complete in six weeks (fig. 2 A). There was no sequestration and the maximum temperature was 100 F.; the white blood cell count was 21,000 when the diarrhea started and did not exceed 11,000 during the course of the osteomyelitis. The infant was discharged in excellent condition.

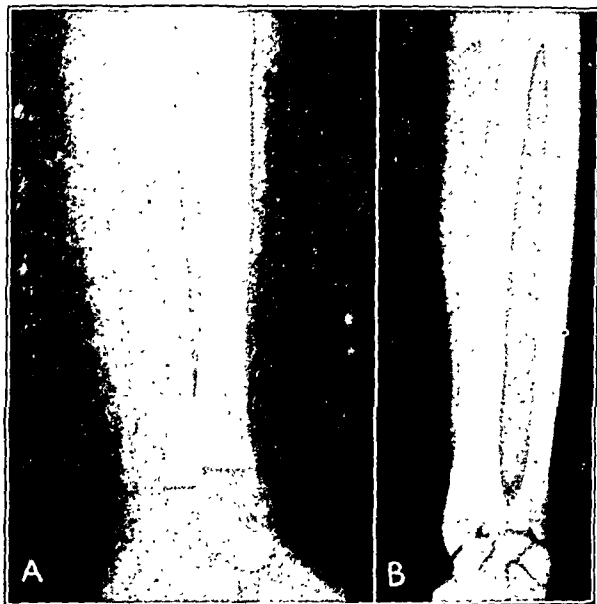


Fig. 2.—A (case 2), osteomyelitis of the tibia, involving entire shaft and complicated by a pathologic fracture. There was complete healing in six weeks under penicillin therapy. B (case 3), osteomyelitis of the radius treated with penicillin, six months after onset of disease. The failure of healing and sequestration were unsuspected clinically because of the absence of symptoms. True status determined by roentgenographic examination only.

Comment.—Osteomyelitis, complicating treatment of an ill, weak premature infant, healed in six weeks under penicillin therapy. Though the infection involved the entire shaft of a tibia and was itself complicated by a pathologic fracture, local and constitutional symptoms were minimal, and the bone did not sequestrate.

CASE 3.—W. F. W., a white boy aged 18, was admitted after he had received penicillin for three weeks for osteomyelitis of the radius. Excruciating pain had been relieved, but the

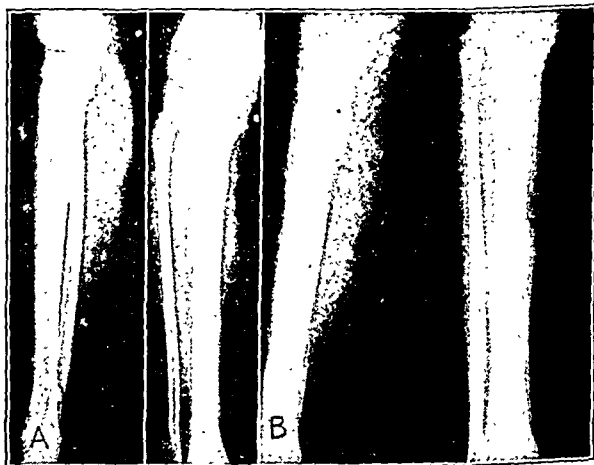


Fig. 3 (case 4).—Osteomyelitis of the tibia, symptoms controlled by penicillin but infection still spreading.

forearm was still tender, swollen and hot. The temperature was 101 F., and the white blood cell count 12,500. On the day of admission, the central abscess was unroofed, releasing a large amount of thick, white pus. Penicillin was continued

6. Jackson, C. L., Jr.: Personal communication to the authors.

and sulfadiazine started. Local and constitutional symptoms promptly disappeared. Five weeks later (fig. 2B), healing had begun but sequestrums had developed. It was nearly six months before he could be given a hospital bed for sequestrectomy. During this time, there was persistent drainage, but no discomfort or fever.

Comment.—During treatment for osteomyelitis by penicillin, it is more important than ever to follow the course of the infection by roentgen rays. The clinical picture is frequently completely misleading.

CASE 4.—After ten days of pain in the upper part of the tibia accompanied by limping, fever, localized hyperemia and swelling, roentgenograms of R. R., a white boy aged 8, revealed a slight amount of destruction of bone in the anterior tibial cortex just distal to the upper epiphyseal line. Penicillin was administered for two weeks. In one week, local and constitutional symptoms had disappeared. Roentgenograms showed no change. Penicillin was discontinued. Two weeks later, local symptoms reappeared. Roentgenograms (fig. 3A) now showed definite progress of the osteomyelitis. Penicillin again produced rapid clinical improvement, but check roentgenograms (fig. 3B) seven weeks later showed the infection to have spread still further.

Comment.—The infection might have been completely arrested by more prolonged treatment. When it flared up, penicillin could control the clinical symptoms but not the spread of the infection.

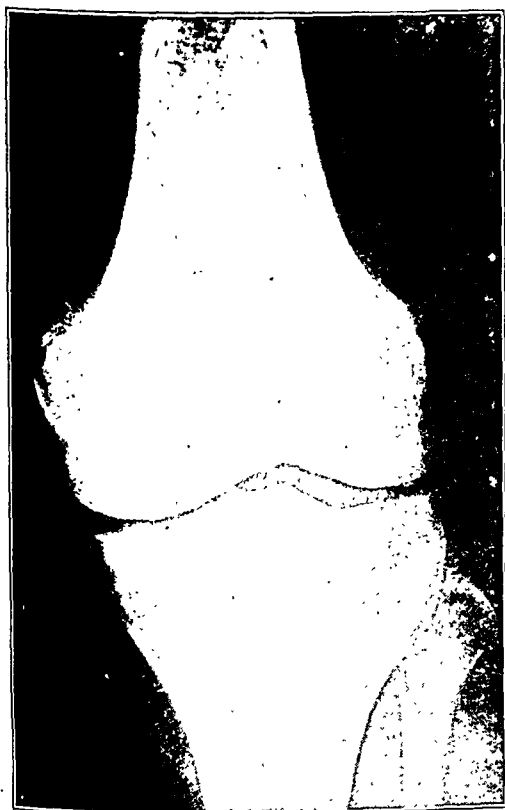


Fig. 4 (case 5).—Fibrosarcoma of the femur, the biopsy diagnosis of which was delayed because the clinical response to penicillin was that of Brodie's abscess.

CASE 5.—G. S., a woman aged 31 years, had suffered intermittent pain in the left knee for five years. On examination, the knee was found to be partially ankylosed, tender, moderately swollen, slightly hot and slightly reddened. The temperature was 99 F., the white blood cell count 8,400. Roentgen examination (fig. 4) showed central bone destruction with perforation

of the cortex in the condylar region. Biopsy was advised to differentiate between Brodie's abscess and an atypical tumor of the bone.

Penicillin was given preoperatively. In forty-eight hours, all pain had disappeared and articular motion was partially restored. The patient then refused biopsy. Penicillin was given for two



Fig. 5 (case 6).—Large left perinephritis abscess, demonstrated by lateral displacement of the left kidney on intravenous pyelography. Penicillin had obscured clinical evidence of the infection.

weeks, during which time roentgenograms showed increased destruction of bone, and the roentgenologists again urged biopsy. The surgeons were willing but not enthusiastic, feeling that the clinical course indicated Brodie's abscess, and the patient flatly refused. When penicillin was stopped, pain recurred. Roentgenograms showed progressive destruction of bone. Exploration revealed a tumor. The pathologic report was highly malignant fibrosarcoma.

Comment.—Penicillin caused a fibrosarcoma to follow the clinical course of Brodie's abscess. Sufficient importance was not attached to the fact that destruction of bone progressed steadily, in spite of the clinical improvement.⁷

CASE 6.—S. W. B., a boy aged 18 years, was admitted with a history of pain in the left flank of fifteen days' duration, for which he had received penicillin with partial relief of pain.

On admission, the left flank was moderately full and tender. The urine was normal, and the temperature normal. Penicillin was continued for another week with slow disappearance of the pain and fulness in the left flank. Pain suddenly developed in the lower left part of the chest; the white blood cell count jumped from 10,000 to 25,000, and roentgenograms of the chest revealed a left pleural effusion. Large amounts of bloody fluid containing staphylococci were removed in the next two days. Pyelograms were then obtained by the intravenous method, demonstrating a lateral displacement of the left kidney (fig. 5). The next day, the region of the left kidney was

7. While demonstrating a scientific exhibit on the subject of this paper at the Atlantic City meeting of the American Medical Association one of us (V. W. A.) was told by eleven different physicians that they had had single cases of bone tumors in which the pain has been greatly relieved during treatment with penicillin, an indication that this case of ours may not be uncommon.

explored, releasing a large amount of thick pus from the perinephritic space. The chest fluid promptly became sterile. Pleural thickening necessitated decortication three weeks later, after which convalescence was uneventful.

Comment.—Penicillin obscured the progress of a perinephritic abscess, delaying drainage until empyema developed.

CASE 7.—P. P., a girl aged 19 years, had a tonsillectomy under ether anesthesia. Two weeks later, fever, cough and foul sputum developed. An abscess in the upper lobe of the right lung was demonstrated by roentgen ray. During a course of penicillin, the abscess disappeared, leaving only fibrous scarring. Two weeks after the penicillin was discontinued, all symptoms returned. Roentgenograms now showed pneumonitis at the site of the abscess. For the next six months, symptoms were intermittent and were easily controlled promptly by penicillin. Roentgenograms (fig. 6) showed dense infiltration. (Note the cavity on the Bucky plate.) At operation, a dense, hard area, suggestive of cancer, was found in the anterior half of the upper lobe of the right lung. The pathologist reported subacute bronchiectasis and an abscess 1.5 cm. in diameter.

Comment.—This is one of a number of cases which we have seen in which penicillin has discouraged but not cured a lung abscess, leading to the development of a stony hard area of subacute bronchiectasis.

CASE 8.—W. E. McC., a man aged 34 years, had lobar pneumonia, from which he recovered promptly, being treated with sulfadiazine. Three weeks later, fever and productive cough returned. On roentgen examination, "a spot on the lung" was discovered. After four weeks of treatment with penicillin and sulfonamide drugs, he was well for four months. Fever and cough recurred; the sputum was foul and copious; there was a rapid loss of weight and strength, and a roentgenogram showed "the spot on the lung" to be larger.



Fig. 6 (case 7).—End result of a postanesthesia abscess of the upper lobe of the right lung treated by penicillin. Lobectomy was necessary.

Admission to a state tuberculosis sanatorium was sought and obtained. During a two months' stay there, repeated sputum examinations were negative for tubercle bacilli, the patient continued to lose strength, and it was noted that clubbed fingers developed. He was then transferred to the University Hospital.

Roentgenograms of the chest, on admission (fig. 7), showed a dense opacity in the upper lobe of the right lung. On

bronchoscopy, inflammation of the bronchus of this upper lobe was observed and a small amount of purulent sputum was seen coming from it. The abscess was drained in two stages. At the second operation, a large amount of thick yellow pus and some necrotic tissue were evacuated. Penicillin was given



Fig. 7 (case 8).—End result of a postpneumonia abscess of the upper lobe of the right lung treated by sulfonamide drugs and penicillin. Two stage drainage was necessary.

throughout the hospital stay. The white blood cell count never exceeded 14,000, and there was only a low grade fever. Recovery was uneventful.

Comment.—Sulfonamide drugs and penicillin obscured the clinical picture in a postpneumonia abscess of the lung to such an extent that the patient was placed in a tuberculosis sanatorium. Correct diagnosis and proper treatment were deferred for months.

CASE 9.—I. J., a man aged 57 years, had pneumonia of the lower lobe of the right lung, complicated by a pleural effusion, which was treated with penicillin and sulfadiazine. All cultures from the chest fluid were negative. The fluid gradually decreased, the pneumonia slowly resolved, and after one week of normal temperature he was discharged. He returned ten days later, stating that a dull pain had developed in the base of the right lung as soon as he got home (within twenty-four hours after discontinuance of penicillin and sulfadiazine); that he had felt weak and feverish, and had had one night sweat. Roentgenograms showed more fluid in the base of the right lung. Thick, greenish pus was obtained by chest tap from which anaerobic hemolytic and nonhemolytic streptococci were cultured. Penicillin and sulfadiazine were again administered. The response was poor, and a week later the empyema cavity was decorticated. Recovery was rapid.

Comment.—Penicillin and sulfadiazine delayed but did not prevent development of empyema complicating lobar pneumonia. More prolonged treatment might have been beneficial.

CASE 10.—Treated for pneumonia with a sulfonamide drug, O. F. H., a man aged 53 years, responded favorably, but after he had been afebrile for one week his sputum became more copious and foul. He lost strength and had a number of chills and more fever. After three weeks of poor response to a sulfon-

amide drug, he was referred to the University Hospital. Roentgenograms showed pocketed fluid well forward in the left side of the chest and close to the mediastinum. At operation, thick pus drained from the cavity and a bronchial fistula was found. It was not clear whether this was an empyema or abscess cavity. Recovery was good.

Comment.—A sulfonamide drug attenuated an empyema (or lung abscess) enough to delay surgical treatment several weeks.

CASE 11.—S. S., a woman aged 40 years, was admitted in an attack of acute cholecystitis. Placed on a regimen of nothing by mouth, intravenous fluids and penicillin, she was completely asymptomatic within three days. She was gradually built up to a regular diet and prepared for surgical treatment. A cholecystogram revealed a nonfunctioning gallbladder. Cholecystectomy was done on the seventeenth hospital day. The gallbladder wall was thick and indurated, the gallbladder filled with stones and purulent exudate.

Comment.—The clinical picture of acute cholecystitis was abruptly obscured by penicillin. For two weeks, a severely diseased gallbladder was kept completely silent.

CASE 12.—Five days before admission, a woman aged 28 years experienced severe pain in the left ear, followed in a few hours by purulent drainage. On admission, the left ear was draining copiously, there was tenderness behind it, and the temperature was 103 F. Roentgenograms showed a hazy left mastoid without cell destruction. Penicillin was started at once. Forty-eight hours later, there was no fever, no tenderness, and discharge had almost ceased, but the canal was sagging. A week later, the ear again became painful, and after myringotomy discharge was profuse. Roentgenograms showed the left mastoid to be considerably hazier, but still no cell destruction was demonstrated. At mastoidectomy, all cells were found to be filled with gelatinous, agglutinated pus.

Comment.—This is one of a number of cases of mastoiditis in which penicillin restrained but did not

Two weeks later, while the patient was still on penicillin, a swelling suddenly appeared above the left zygoma. Though the left drum was bulging and roentgenograms showed a hazy mastoid without destruction of bone, the temperature was 99.2 F. At operation, the mastoid structures were soft and filled with granulations.

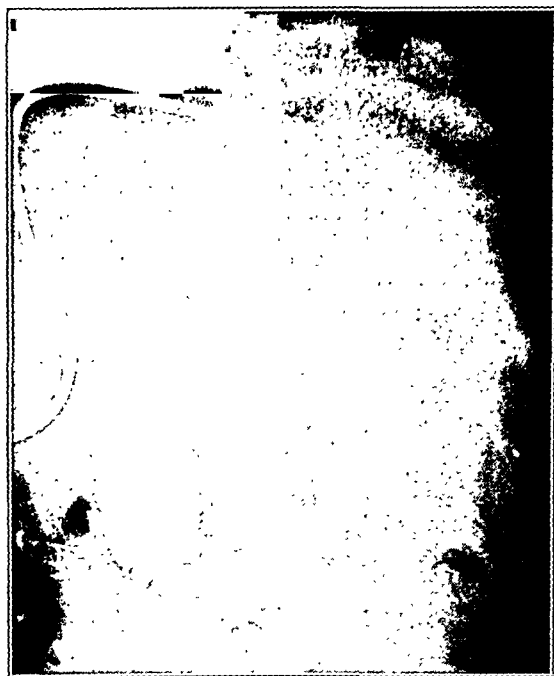


Fig. 9 (case 14).—Same patient as in figure 8, after drainage of the right subphrenic abscess. A large subhepatic abscess of the left upper quadrant was demonstrated roentgenologically by the displacement of the stomach, but was not recognizable by physical signs or clinical symptoms during penicillin therapy.

Comment.—Treatment of acute sinusitis with penicillin completely masked acute mastoiditis.

CASE 14.—C. L. W., a man aged 30 years, had a sudden attack of violent epigastric pain. Hospitalized elsewhere with a tentative diagnosis of spider bite, he was, in addition to other measures, given penicillin. He slowly improved, and two weeks later was discharged, having had no temperature for a week. The night after discharge and discontinuance of the penicillin, he suffered a second attack of violent epigastric pain. Roentgenograms made elsewhere (fig. 8) showed a large right subphrenic air space.

The patient was admitted to the University Hospital; penicillin was again started and continued throughout the hospital stay. The right subphrenic space was drained, releasing a large amount of gas and foul, thin pus. Drains were brought out through the incision and a five day course of streptomycin given. Nevertheless, the temperature curve continued septic. Roentgenograms two weeks later showed air still present under the right diaphragm, both diaphragms fixed, and a little fluid in the base of the left lung. The surgeon elected first to reexplore the right subdiaphragmatic space. No pus pockets were found. Then barium studies of the stomach were done (fig. 9), showing the stomach shifted to the left and downward. Through an upper midline incision, a large subhepatic abscess in the left upper quadrant was drained. Postoperative studies showed the stomach back in normal position.

Comment.—Here penicillin obscured the clinical diagnosis of a right subdiaphragmatic and left subhepatic abscess. The roentgen observations were diagnostic.

SUMMARY

Symptoms were markedly altered by chemotherapy in the following conditions: (1) diverticulitis with cancer, (2) fibrosarcoma, (3) perinephritic abscess,



Fig. 8 (case 14).—Large right subphrenic abscess, the symptoms of which were obscured by penicillin therapy.

cure the infection. Frequently, the cell walls remain intact; they usually are found to contain gelatinous, agglutinated pus.

CASE 13.—J. C. McC., a boy aged 8 years, had acute sinusitis and a painful ear. During treatment with penicillin the pain in the ear disappeared so quickly that it was forgotten, treatment being directed to relief of the severe sinus infection.

(4) lung abscess, (5) acute cholecystitis, (6) mastoiditis, (7) subphrenic and subhepatic abscess, (8) empyema and (9) osteomyelitis.

The roentgenologist must accept an increasingly large share of the responsibility for correct evaluation of progression or regression of pathologic processes due to infection when treated by chemotherapy.

ABSTRACT OF DISCUSSION

DR. GEORGE M. WYATT, Washington, D. C.: I have been interested in osteomyelitis as altered by penicillin and the sulfonamide drugs. In regard to the case that Dr. Archer showed of an acute condition which was thought to be osteomyelitis, I should like to add a word or warning on the other side, as probably all of you have seen cases in which the pathologists found it difficult to differentiate between malignant and benign tumors and callus. This is particularly true in children when attempts are made to get a quick diagnosis. From the few cases with which I have personally come in contact, in which extremities have been removed with a mistaken diagnosis of cancer, I wonder whether perhaps more extremities have not been removed with the mistaken diagnosis than malignant tumors cured by amputation. The roentgen diagnosis, as Dr. Archer has stressed, is based on pathologic changes. If we continue to study pathologic changes as we see them on the roentgenogram and keep in mind the effect of chemotherapy on pathologic changes, we can help the clinician.

Council on Physical Medicine

The Council on Physical Medicine on the advice of the Consultants on Audiometers and Hearing Aids has adopted the following article. The Consultants on Audiometers and Hearing Aids are: Drs. Gordon Berry, Hallowell Davis, Kenneth M. Day, Edmund Prince Fowler, Isaac H. Jones, Dean Lierle, Moses H. Lurie, Douglas Macfarlan, C. Stewart Nash and Paul E. Sabine. The Council appreciates the cooperation of the Consultants on Audiometers and Hearing Aids.

HOWARD A. CARTER, Secretary.

REBATES

The House of Delegates of the American Medical Association has taken a definite stand against the acceptance by physicians of rebates or "kick-backs" in any form. A physician dispenses medical or surgical service and for this he is entitled to a fair recompense. When he, himself, furnishes drugs, spectacles or any physical appliance and when he is able to service such physical appliances, he is entitled to a fair profit on these articles of merchandise in addition to and above his own professional fee and such a profit on such articles of merchandise does not in any way constitute a rebate or "kick-back." However, when he prescribes such an article for his patient and the patient purchases the article from an independent dealer the doctor is not morally or ethically entitled to any financial return from the dealer.

It has come to the attention of the Consultants on Audiometers and Hearing Aids of the Council on Physical Medicine of the American Medical Association that physicians in various parts of the country are being offered, and that some have accepted, money from dealers for recommending particular makes of hearing aids. Such a transaction between the doctor and the dispenser of hearing aids constitutes a rebate and is in direct contravention of the stand of the American Medical Association in this matter. It is degrading to the profession and commercializes the doctor who

accepts such a "kick-back." It is not believed by the Council on Physical Medicine that such a policy is encouraged by the manufacturers of hearing aids, but the manufacturer cannot always control the business ethics of his individual dealers.

A modified form of "kick-back" is a recent suggestion that a hearing aid dealer would sell only to patients whose ears had been examined by an otologist. The doctor's fee according to this arrangement would be paid by the hearing aid dealer. Presumably the cost would be passed on ultimately to the patient in the form of a higher price for his instrument. Such an arrangement is disapproved by the Consultants, since it involves a payment from dealer to physician that might be interpreted or used as a "kick-back." To be beyond criticism in such a situation, the payment to the doctor should be made by the patient himself, not by the dealer.

The Council on Physical Medicine believes that these practices constitute the acceptance of a rebate on the part of the profession and that every possible step should be taken to abate it.

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, Secretary.

OTARION HEARING AID MODEL E-1S ACCEPTABLE

Manufacturer: Otation Hearing Aids, 159 North Dearborn Street, Chicago 1.

This instrument is a three tube air conduction hearing aid, with the batteries contained in the amplifier case. The case is constructed of die-cast magnesium alloy, coated with vinyl resin finish, ivory in color. A side-hinged full length back cover gives access to the battery compartments and the three tubes, which are readily accessible. The magnetic type receiver is connected to the amplifier case by means of a light plastic-covered cord which has dual pin plugs at each end.

Two wheel-type controls are placed at the top of the case. One is a volume control; the other is a combination "on-off" switch and tone control with three tone settings: 1 dot, full tone range; 2 dots, slight low frequency attenuation, 3 dots, greater low frequency attenuation. A detachable wearing or attachment clip fastens either to the front or the back of the case.

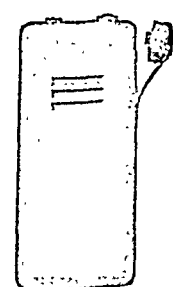
The dimensions are 133 by 64 by 22 mm. (5¼ by 2½ by ¾ inches) and the weight with the batteries is 213 Gm. (7½ ounces). The A battery of the zinc and carbon type is 1.5 volts and the B battery of the zinc and carbon type is 30 volts. The A battery drain is 55 milliamperes and the B battery is 0.36 milliamperes.

Acoustical Gain for Pure Tones

Tone Control Position...	250	500	1,000	2,000	3,000	4,000 cycles
Maximum gain, 1 dot...	30	31	34	40	41	30 db.
Maximum gain, 2 dots...	22	27	33	40	41	30 db.

These gain measurements for pure tones show the amplification efficiency of the hearing aid in decibels at the indicated frequency levels.

Acoustical Gain for Speech.—The maximum gain, with the tone control in the 1 dot position, was 34 decibels. This value for speech was obtained on 2 different hard of hearing persons, each of whom is an experienced user of hearing aids and has approximately 60 decibels unaided loss for speech with a speech audiometer. These 2 persons perceived speech with 34 decibels less intensity through a high quality sound amplification system (speech audiometer) in a sound-proof room with the hearing aid than without it.



Otation Hearing Aid Model E-1S

The Council believes that this instrument, the Otariion Model E-1S, will be satisfactory only for persons requiring moderate amplification and should not be recommended for persons with severe hearing impairments.

The Council on Physical Medicine voted to include the Otariion Hearing Aid Model E-1S in its list of accepted devices.

SYLVANIA 250 WATT R40 INFRA-RED LAMPS ACCEPTABLE

Manufacturer: Sylvania Electric Products, Inc., 60 Boston Street, Salem, Mass.

Two specimens of a 250 watt R40 infra-red lamp were submitted. These require a 120 volt alternating current and draw 208 amperes. They weigh 225 Gm. ($\frac{1}{2}$ pound) and measure about 13 cm. (5 inches) in diameter. They differ in length and in the material of the bulb; the ruby type measures about 18 cm. ($7\frac{1}{4}$ inches) while the frosted type measures about 16.5 cm. ($6\frac{1}{2}$ inches). Each lamp has an aluminum reflector and a tungsten filament operating at a color temperature of 2,400 degrees Kelvin.

On the basis of the available evidence the Council concluded that these lamps are satisfactory sources of thermal radiation, useful especially for the close-up irradiation of small areas of the body, such as the shoulder or the forearm, where they are more convenient and less likely to cause burns than are more powerful lamps with larger reflectors.

The Council voted to include the Sylvania 250 watt R40 infra-red lamps in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORT TO THE COUNCIL

The Council has authorized publication of the following reports.

AUSTIN SMITH, M.D., Secretary.

EXCESSIVE CONCENTRATIONS OF SOLUTIONS SODIUM ASCORBATE NOT ACCEPTABLE

In considering the acceptance of solutions of sodium ascorbate it has been found that some brands are marketed in concentrations of vitamin C far in excess of that which may be necessary for the treatment of conditions resulting from deficiencies of this vitamin. Some of these products have been accompanied by representations that the product is intended for treatment of allergies. The evidence in support of this therapeutic procedure does not appear to be convincing, and there seems to be no justification for parenteral administration of this vitamin in excess of concentrations adequate to temporarily overcome severe deficiencies of the vitamin.

The Council has not heretofore and does not now contemplate recognition of claims for the use of injections of sodium ascorbate in the treatment of allergies. The Council therefore voted to limit its acceptance of injectable solutions of sodium ascorbate to concentrations representing 100 mg. of ascorbic acid per cubic centimeter or less.

METHADON CHANGED TO METHADONE

The Council recently published a report announcing recognition of the generic name "methadon" for 6-dimethylamino-4, 4-diphenyl-3-heptanone (J. A. M. A., Aug. 23, 1947, p. 1483). Subsequently, it was pointed out that inasmuch as the substance is a ketone and chemical nomenclature rules call for the names of ketones to end in "one," an appropriate change should be made in the adopted term. A poll of the various interested firms revealed that all recognized the logicity of this change, although not all were certain that such a change is necessary. However, in the interest of accurate nomenclature and on motion of the Council's Committee on Nomenclature, it was voted that recognition of the term "methadon" be revoked and that instead the term "methadone" (with a final "e") be recognized as the generic name for 6-dimethylamino-4, 4-diphenyl-3-heptanone. The name "methadon" will be retained as a synonym in N. N. R. until the revised spelling has become well established.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., Secretary.

THIAMINE HYDROCHLORIDE (See New and Non-official Remedies 1947, p. 506).

The following dosage forms have been accepted:

R. E. DWIGHT & COMPANY, DES MOINES, IOWA

Tablets Thiamine Hydrochloride: 5 mg. and 10 mg.

LINCOLN LABORATORIES, INC., DECATUR, ILL.

Solution Thiamine Hydrochloride: 10 mg. per cc., 10 cc. vials. Preserved with chlorobutanol 0.5 per cent.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1947, p. 247).

The following additional dosage form has been accepted:

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

Solution Diethylstilbestrol in Oil: 5 mg. per cc., in peanut oil, 1 cc. ampul.

CONTRACEPTIVE CAPSULES AND SUPPOSITORIES (See New and Nonofficial Remedies 1947, p. 270).

The following dosage form has been accepted:

SPECIAL FORMULA CORPORATION, NEW YORK

Lygenes Vaginal Suppositories: 2.25 Gm. A vaginal suppository with an oil of theobroma base prepared from the formula:

	Per Cent
Boric acid	0.10
Zinc sulfocarbolate	0.50
Hydroxyquinoline benzoate	0.30
p-Chloro-symm. m-dimethyl hydroxybenzene.....	0.05
p-tert. amylhydroxy benzene	0.05
Beeswax, white	5.00
Corn starch	9.00
Perfume	0.20
Cocoa butter	84.80

Actions and Uses.—See article on Contraceptive Capsules and Suppositories.

Dosage.—One suppository.

DIENESTROL (See THE JOURNAL, Nov. 22, 1947, p. 773).

The following dosage form has been accepted:

RARE CHEMICALS, INC., HARRISON, N. J.

Tablets Dienestrol: 0.1 mg. and 0.5 mg.

DIETHYLSTILBESTROL-U.S.P. (See New and Non-official Remedies 1947, p. 347).

The following dosage form has been accepted:

BIO-INTRASOL LABORATORIES, INC., BROOKLYN

Solution Diethylstilbestrol in Oil: 1.0 mg. per cc. in sesame oil, 1 cc. ampuls.

MENADIONE-U.S.P. (See New and Nonofficial Remedies 1947, p. 533).

The following dosage form has been accepted:

R. E. DWIGHT & COMPANY, DES MOINES, IOWA

Capsules Menadione: 2 mg.

SULFADIAZINE-U.S.P. (See New and Nonofficial Remedies 1947, p. 120).

The following dosage form has been accepted:

COLE CHEMICAL CO., ST. LOUIS

Tablets Sulfadiazine: 0.5 Gm.

CORRECTION

Toxic Dose of BAL in Oil.—In the monograph on "2,3-Dimercaptopropanol in Oil.—BAL in Oil" (J. A. M. A. 137:368 [May 22] 1948) the statement appearing in the first sentence of the fourth paragraph under the heading "Actions and Uses," relative to the toxic dose of this drug, should read ". . . but doses of 300 mg. (5 mg. per kilogram of body weight) may produce . . ."

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, OCTOBER 30, 1948

ST. LOUIS INTERIM SESSION

This issue of THE JOURNAL calls special attention to some of the features of the Interim Session of the Association to be held in St. Louis Nov. 30-Dec. 3, 1948. The features of this session include a graduate educational program, technical and scientific exhibits, general meetings of unusual quality and one evening devoted wholly to entertainment. The House of Delegates will hold its sessions and, as a new departure, the annual reports of officers and Board of Trustees will be considered in the Interim Session rather than in the Annual Session.

Attention is called particularly to the nature of the graduate educational program which has already been described in THE JOURNAL and which is unique. There will be discussions each morning and each afternoon, after which the audience will go in groups of about a hundred to separate halls, where consideration will be given to certain aspects of the subject discussed with presentation of cases. At the same time the scientific exhibits will make available the laboratory material used in such studies as well as other exhibits. The general meetings will include the award of the General Practitioner Medal and addresses by distinguished speakers. The evening of entertainment has been supplied by one of the advertisers in THE JOURNAL and includes the stars of a series of radio programs who are famous in the United States. Attendance at the entertainment will be limited to physicians and their families registered at the session and is not open to the general public.

The Technical Exhibit occupies all the space available in the auditorium and represents demonstrations of the new drugs, the new devices, the new books and other developments in medicine since the Annual Session last June.

The timing of all of these programs has been so arranged as to give ample opportunity for those registered in the session to participate in each of the sessions and also to visit both the scientific and the technical exhibits.

Already the registrations in hotels in St. Louis indicate a large attendance, but there will be ample space for others who send immediately for their hotel reservations.

THE ADVERTISING OF CIGARETTES

For some years THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, the state medical journals and most other medical publications have carried the advertisements of the various companies that manufacture cigarettes. Actual surveys indicate that the majority of physicians themselves smoke cigarettes. Extensive scientific studies have proved that smoking in moderation by those for whom tobacco is not specifically contraindicated does not appreciably shorten life. Postmortem examinations do not reveal lesions in any number of cases that could be definitely traced to the smoking of cigarettes. From a psychologic point of view, in all probability more can be said in behalf of smoking as a form of escape from tension than against it. Several scientific works have been published that have assembled the evidence for and against smoking, and there does not seem to be any preponderance of evidence that would indicate the abolition of the use of tobacco as a substance contrary to the public health. Physicians are no doubt familiar with the articles that have been published on the effects of tobacco on the circulation, the blood, the gastric acidity and other physiologic mechanisms within the human body. This editorial will not attempt to summarize that evidence or to derive any positive conclusions from it. It is concerned, rather, with the manner in which leading manufacturers have begun to lean so heavily on reference to the medical profession in promoting their products.

The advertising accepted by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION has always been screened through various committees, and the evidence in behalf of the statements made has seemed to be sufficient to warrant the statements that appear in the advertisements. Gradually, however, claims point more and more toward the single factor of the extent to which certain cigarettes irritate the throat. One product is said to be less irritating than others, and the suggestion is made that persons who suffer irritation from other cigarettes try the one that is said to be less irritating. Another is said to be always milder; a third is said to be absolutely free from throat irritation as based on tests conducted under the supervision of physicians.

From time to time the manufacturers have sought for some positive chemical or physical factor related to the extent of irritation of the mucous membranes of the throat, and evidence and newer knowledge concerning growing, curing and blending have been accumulated in behalf of their contention.

Readers must remember that the cigarette business is a tremendous business and one that has increased continuously in volume for many years. The consumption of cigarettes has increased from approximately 10

billion cigarettes annually around 1910 to approximately 350 billion annually since 1946. The rise in consumption of cigarettes has paralleled the development of new techniques in advertising, utilizing the press, periodicals, the radio, motion pictures, television, sky writers, billboards, direct by mail, sampling, exhibits and every other technique. No doubt the manufacturers are aware of the trend in the promotion of alcoholic liquors and their abuse which finally led to the enactment of prohibition legislation. This may well be the path now being followed by the cigarette industry and one which will eventually lead to restrictive legislation unless voluntary restrictive policing is undertaken by the industry.

The publications of the American Medical Association have received a few protests from physicians relative to the advertising of cigarettes: The total number of letters would not exceed a dozen annually. Some protests have been stimulated by the competition in the cigarette industry since the users of glycerin are at war with the users of diethyleneglycol; since the purchasers of tobacco with less nicotine compete with those using tobacco with more nicotine, and since the manufacturers of devices that eliminate tar oppose the smoking of cigarettes without elimination of tar. Probably there is no other merchandise marketed in the United States in which the competition is fiercer or greater.

Now that the advertising has begun to concentrate on the factor of throat irritation, more attention will have to be given to the methods by which irritation of the throat can be measured. Pathologically, one considers the clinical signs and symptoms such as redness, congestion, swelling, exudation, pain, sensitivity and similar subjective symptoms and objective signs. Obviously, more refined techniques for study are in order.

Studies have been made of the throat utilizing color photography; yet none of the techniques by which throat irritation is measured is standardized. Furthermore, we know that the throat is easily irritated by various bacteria and viruses, as well as by chemicals and physical agents. It would be difficult indeed to differentiate between the irritation caused by the smoking of cigarettes and that caused by various bacteria, chemicals or heat. Manufacturers and the advertising agencies that develop this advertising are approaching a point in which the advertising is no longer significant. And yet one can remember when it used to be worse than it is now.

The Federal Trade Commission has been striving to hold this advertising within reasonable limits. Hearings have been held for a number of years and as yet a decision has not been forthcoming from the Federal Trade Commission as to claims that are justified by the evidence and those that are not. Further truly scientific studies and respect for intelligent advertising may obviate the need for further extensive and time-consuming trials.

CONGENITAL DEFECTS

Since Gregg and his associates¹ presented original evidence that maternal rubella infection in early pregnancy appeared responsible for the frequent development of congenital anomalies in infants subsequently delivered, evidence for the truth of this influencing factor has grown rapidly. Anomalies most commonly noted have been ocular defects, deafness, heart lesions, microcephalus, mental retardation and dental defects. Estimates of percentage involvement of the fetus from maternal rubella during the first three months of pregnancy range from 90 per cent (Australia) to 27 per cent (United States), with a graded decreasing expected anomaly rate from rubella infection in later pregnancy. Reports have been made of anomalous development following maternal infection in the eighth and ninth month of pregnancy. A woman contracting rubella during pregnancy has now approximately a ten to one chance of subsequently being delivered of a congenitally defective child.²

Fetal injury is believed to occur as a result of passage of rubella virus through the placental barrier, thereafter exerting a direct effect on early somatic fetal development. Paradoxically, rubella produces the same result when it occurs and subsides even before conception. Retention of the virus in maternal tissues and its later passage through the placenta to the fetus may occur. Other diseases occurring in early pregnancy and in the immediate preconception period, particularly infectious mononucleosis, are stated to result in congenital defects. Both restricted maternal diet and fetal irradiation are known to be capable of causing anomalous development in offspring of laboratory animals.

Recent experiments reported by Gillman, Gilbert and Spence³ should shed new light on the many unknown physiologic factors which bear on the problem of congenital anomalies. Believing that later effects of chronic malnutrition were causally related to a metabolic disorder induced by entry of abnormal particles into and by qualitative changes in plasma proteins, these investigators treated female rats with trypan blue because of its plasma albumin-binding properties. A random group of 100 breeding female rats and 25 male rats on normal stock diet were given repeated injections of 1 cc. of trypan blue at fourteen day intervals. Of the 100 females, 11 remained sterile. In a total of 697 offspring born in 118 litters, 19.2 per cent presented gross macroscopic malformations detectable at birth. Malformations such as hydrocephalus, spina bifida, tail defects, eye defects and defects of other systems ranged in decreasing numbers, averaging 1.4 anomalies per rat.

1. Gregg, N. McA.; Beavis, W. R.; Heseltine, M.; Machin, A. E.; Vickery, D., and Meyers, E.: The Occurrence of Congenital Defects in Children Following Maternal Rubella During Pregnancy, *M. J. Australia* 2: 122-126 (July 28) 1945.

2. Wesselhoft, Conrad: Rubella (German Measles) (Concluded), *New England J. Med.* 236: 978-988 (July 26) 1947.

3. Gillman, J.; Gilbert, Christine; Gillman, T., and Spence, Isobel: A Preliminary Report on Hydrocephalus, Spina Bifida and Other Congenital Anomalies in the Rat Produced by Trypan Blue, *South African J. M. Sc.* 13: 47-90 (March) 1948.

Timing of dye injection was extremely significant. In female rats that received injections before conception as well as one additional injection during pregnancy, incidence of abnormal pups was 25 per cent. Mother rats given injections the seventh day before conception as well as on the seventh day of pregnancy had an 80 per cent incidence of abnormal pups. Rats receiving only one injection on the day before conception showed a 25 per cent incidence of abnormal pups. Rats receiving one injection, on the sixteenth day before conception, gave birth to pups in which jaundice developed within the first three days of life. Among all offspring, high neonatal mortality, reduction in size of litters, low birth weights and a general retardation of postnatal development occurred.

The authors expressed the belief that the original hypothesis which prompted them to use trypan blue for producing congenital malformations proved efficient. The metabolic effect was operative when rats were fed a balanced diet. Trypan blue was bound to plasma albumin, and the use of the dye could be appropriately manipulated to increase the incidence of malformed offspring to 80 per cent. The authors cite what they consider to be an apparent parallel in the development of congenital defects in offspring of trypan blue-treated rats and defects in infants following maternal rubella infection. It is suggested that the supposed mode of action of the rubella virus on the human fetus be reexamined, as passage of virus through the placental barrier is debatable and as they have demonstrated that the trypan blue in maternal rats did not enter the fetus, the amniotic epithelium or amniotic fluid. All embryonic tissues apart from the yolk sac were free from trypan blue particles.

Discoveries concerning the connection between maternal rubella infection and developmental defects in offspring plus previously known similar effects of diet restriction and irradiation in animals and the described work of Gillman and associates³ with trypan blue open a tremendously important new field for basic research. If, as the experiments of Gillman and associates tend to demonstrate, the effects of trypan blue and, by inference, rubella virus, are not direct effects on the fetus but cause remote preceding metabolic states which subsequently interfere with fetal development, the speculative number of viruses, bacteria and chemicals which may produce such metabolic effects are legion. Additionally, the reported occurrence of congenital deformities from preconception effects of rubella infection and trypan blue definitely reduce the nature-nurture or heredity-environment argument regarding developmental influences to the preconception period, wherein affective metabolic states in the male must also be properly considered. While this does not diminish the absolute importance of gene influences, it most certainly increases the relative importance and scope of environmental factors to be considered in human development.

Also, of major importance is the fact that an azo dye compound (trypan blue⁴), formerly considered essentially nontoxic and recommended for use in human therapy, has been demonstrated to have serious consequences on development of animal offspring. Establishment of a wider field for testing toxicity of drugs for human use must now be carefully considered.

Current Comment

SARCOMAGENIC CELLOPHANE

In the course of experiments performed on rats to produce hypertension by wrapping cellophane film around one kidney, Oppenheimer¹ and his associates of Columbia University noted that sarcomas developed in several rats in the neighborhood of the cellophane. The sarcomagenic properties of cellophane film were therefore tested on 110 adult male rats. In 55 of these the left kidney was loosely wrapped with "highstretch" cellulose sausage casing, according to the method introduced by Page.² In the other 55 rats, a piece of cellophane 1 inch (2.5 cm.) square was embedded subcutaneously in the abdominal wall and kept in place by a surgical suture at each corner. Among the rats with the wrapped kidney, 23 survived over eleven months. Of these, 8, or 34.8 per cent, had large well defined tumors. Of the 55 rats in which the cellophane was embedded subcutaneously, 42 survived beyond eleven months. Of these, 15, or 35.7 per cent, had massive tumors. The tumors were usually allowed to grow to 2 to 5 cm. in diameter before the rats were sacrificed or used for transplantation experiments. Transplantations were made by inoculating tumor fragments subcutaneously into the anterior abdominal wall. A total of 199 secondary tumors were thus produced, of which 73 persisted and 126 subsequently receded. Retransplantations were carried out in some instances to the fifth generation. Histologic examinations showed that of the 23 primary cellophane tumors, there were 17 fibrosarcomas, 2 liposarcomas, 1 rhabdomyosarcoma, 1 plasmocytoma, 1 osteogenic sarcoma and 1 undifferentiated sarcoma. Metastases were noted in 3 cases. Sixty-three of the 73 persistent tumors derived from transplantation were fibrosarcomas. In the perirenal series the shortest time taken for the production of a sarcoma was three hundred and sixty-two days. In the subcutaneous series the shortest period of development was four hundred and seventy-one days. Thus far, there have been no reports of similar delayed sarcomagenic effects from the use of cellophane sheaths or coverings in surgical treatment in human beings. The nature of the sarcomagenic factor in commercial cellophane has not yet been determined.

4. Dorland's American Illustrated Medical Dictionary, twentieth edition, Philadelphia, W. B. Saunders Company, 1947, states, "trypan blue, an acid, azo dye which has been used in vital staining and as a remedy in protozoan infections. It is the sodium salt of toluidin-diazo-diaminonaphthol-disulfonic acid."

1. Oppenheimer, B. S.; Oppenheimer, E. T., and Stout, A. P.: *Proc. Soc. Exper. Biol. & Med.* 67: 33, 1948.

2. Page, I. H.: *Science* 89: 273, 1939. Graef, I., and Page, I. H.: *Am. J. Path.* 16: 211, 1940.

THE INTERIM SESSION

AMERICAN MEDICAL ASSOCIATION

ST. LOUIS, NOV. 30-DEC. 3, 1948

OFFICIAL CALL

TO THE OFFICERS, FELLOWS AND MEMBERS OF THE AMERICAN MEDICAL ASSOCIATION

The interim session of the American Medical Association will be held in St. Louis, Nov. 30-Dec. 3, 1948.

The House of Delegates will convene at 10 a. m., Tuesday, November 30. In the House the representation of the various constituent associations for the interim session in 1948 is as follows:

Alabama	2	Massachusetts	6
Arizona	1	Michigan	5
Arkansas	2	Minnesota	4
California	9	Mississippi	1
Colorado	2	Missouri	4
Connecticut	4	Montana	1
Delaware	1	Nevada	1
District of Columbia	3	Nebraska	2
Florida	3	Nevada	1
Georgia	3	New Hampshire	1
Idaho	1	New Jersey	5
Illinois	9	New Mexico	1
Indiana	4	New York	20
Iowa	3	North Carolina	3
Kansas	2	North Dakota	1
Kentucky	2	Ohio	7
Louisiana	2	Oklahoma	2
Maine	1	Oregon	2
Maryland	2	Pennsylvania	10

Rhode Island	1	Washington	2
South Carolina	1	West Virginia	2
South Dakota	1	Wisconsin	3
Tennessee	2	Wyoming	1
Texas	5	Alaska	1
Utah	1	Hawaii	1
Vermont	1	Isthmian Canal Zone	1
Virginia	2	Puerto Rico	1

The scientific sections of the American Medical Association, the Medical Corps of the Army, the Medical Corps of the Navy and the Public Health Service are entitled to one delegate each.

The Scientific Program will open Tuesday, November 30, starting at 2 p. m., and will continue throughout the afternoon of that day. The program will continue on Wednesday and Thursday mornings and afternoons, December 1 and 2, and on Friday morning, December 3, closing at 12 noon. The gold medal for an outstanding general practitioner will be presented on Thursday evening December 2.

The Registration Bureau, which will be located on the lower level of the St. Louis Municipal Auditorium, will be open from 8:30 a. m. until 5:30 p. m., Tuesday, Wednesday and Thursday, November 30 and December 1 and 2, and from 8:30 a. m. to 12:00 noon, Friday, December 3.

R. L. SENSENICH, President.
F. F. BORZELL, Speaker, House of Delegates.
GEORGE F. LULL, Secretary.

OFFICERS OF THE AMERICAN MEDICAL ASSOCIATION 1948—1949

PRESIDENT—R. L. Sensenich, South Bend, Ind.
PRESIDENT-ELECT—Ernest E. Irons, Chicago.
VICE-PRESIDENT—Roy W. Fouts, Omaha.
SECRETARY AND GENERAL MANAGER—George F. Lull, Chicago.
TREASURER—J. J. Moore, Chicago.
SPEAKER, HOUSE OF DELEGATES—F. F. Borzell, Philadelphia.
VICE SPEAKER, HOUSE OF DELEGATES—James R. Reuling, Bayside, N. Y.
EDITOR—Morris Fishbein, Chicago.
BUSINESS MANAGER—Thomas R. Gardiner, Chicago.
BOARD OF TRUSTEES—Louis H. Bauer, Hempstead, N. Y., 1949; E. L. Henderson, Chairman, Louisville, Ky., 1949; John H. Fitzgibbon, Portland, Ore., 1950; James R. Miller, Hartford, Conn., 1950; Walter B. Martin, Norfolk, Va., 1951; Dwight H. Murray, Napa, Calif., 1952; E. J. McCormick, Toledo, Ohio, 1952; Edwin S. Hamilton, Rantakkee, Ill., 1953; Gunnar Gundersen, LaCrosse, Wis., 1953.
JUDICIAL COUNCIL—Edward R. Cunniffe, Chairman, New York, 1949; Louis A. Buie, Rochester, Minn., 1950; Walter F. Donaldson, Pittsburgh, 1951; H. L. Pearson Jr., Miami, 1952; John H. O'Shea, Spokane, Wash., 1953; George F. Lull, Chicago, Secretary.
COUNCIL ON MEDICAL EDUCATION AND HOSPITALS—Reginald Fitz, Boston, 1949; Russell L. Haden, Cleveland, 1950; W. S. Middleton, Madison, Wis., 1951; H. G. Weiskotten, Chairman, Syracuse, N. Y., 1952; Victor Johnson, Rochester, Minn., 1953; W. L. Pressly, Due West, S. C., 1954; Harvey P. Stone, Baltimore, 1955; Donald G. Anderson, Secretary, Chicago.
COUNCIL ON SCIENTIFIC ASSEMBLY—Charles H. Phifer, Chicago, 1949; Henry R. Viets, Chairman, Boston, 1950; L. W. Larson, Bismarck, N. D., 1951; Stanley P. Reimann, Philadelphia, 1952; Alphonse McMahon, St. Louis, 1953, and ex officio the President-Elect, the Editor and the Secretary of the Association.

COUNCIL ON MEDICAL SERVICE—Elmer Hess, Erie, Pa., 1949; Thomas A. McGoldrick, Brooklyn, 1949; Jesse D. Hamer, Phoenix, Ariz., 1950; James R. McVay, Chairman, Kansas City, Mo., 1950; H. B. Mulholland, Charlottesville, Va., 1951; Joseph D. McCarthy, Omaha, 1951; Edward L. Bortz, Philadelphia; R. L. Sensenich, South Bend, Ind.; Walter B. Martin, Norfolk, Va.; George F. Lull, Chicago; Thomas A. Hendricks, Secretary, Chicago.
COUNCIL ON PHARMACY AND CHEMISTRY (Standing Committee of Board of Trustees)—James P. Bar, 1949; D. P. Wood Jr., St. Louis, 1950; P. H. Long, Baltimore, 1950; E. M. Nelson, Washington, D. C., 1950; Torald Sollmann, Chairman, Cleveland, 1951; Isaac Starr, Philadelphia, 1951; R. F. Loeb, New York, 1951; E. M. K. Geiling, Chicago, 1952; S. W. Clausen, Rochester, N. Y., 1952; Paul R. Cannon, Chicago, 1952; E. D. Churchill, Boston, 1953; Joseph Stokes Jr., Philadelphia, 1953; C. Guy Lane, Boston, 1953; Robert T. Stormont, Washington, D. C., 1953; Austin E. Smith, Secretary, Chicago.
COUNCIL ON PHYSICAL MEDICINE (Standing Committee of Board of Trustees)—H. B. Williams, New York, 1949; Frank H. Krusen, Rochester, Minn., 1949; Anthony C. Cipollaro, New York, 1950; M. A. Bowie, Bryn Mawr, Pa., 1950; G. M. Piersol, Philadelphia, 1950; W. E. Garrey, Nashville, Tenn., 1951; W. W. Coblenz, Washington, D. C., 1951; John S. Coulter, Chairman, Chicago, 1951; Derrick Vail, Chicago, 1951; W. E. Grove, Milwaukee, 1951; A. C. Ivy, Chicago, 1952; Frank R. Ober, Boston, 1952; Frank D. Dickson, Kansas City, Mo., 1952; Morris Fishbein, ex officio, Chicago; Howard A. Carter, Secretary, Chicago.
COUNCIL ON FOODS AND NUTRITION (Standing Committee of Board of Trustees)—C. S. Ladd, Washington, D. C., 1949; John B.

Youmans, Chicago, 1949; Harold C. Stuart, Boston, 1950; Morris Fishbein, Chicago, 1950; R. M. Wilder, Rochester, Minn., 1951; Howard B. Lewis, Ann Arbor, Mich., 1951; J. S. McLester, Chairman, Birmingham, Ala., 1951; Philip C. Jeans, Iowa City, 1952; C. A. Elvehjem, Madison, Wis., 1952; William J. Darby, Nashville, Tenn., 1952; George R. Cowgill, New Haven, Conn., 1953; James R. Wilson, Secretary, Chicago.
COUNCIL ON INDUSTRIAL HEALTH (Standing Committee of Board of Trustees)—Rutherford T. Johnstone, Los Angeles, 1949; A. J. Lanza, Chairman, New York, 1949; C. D. Selby, Detroit, 1949; Warren F. Draner, Washington, D. C., 1950; Raymond Hussey, Detroit, 1950; Henry H. Kessler, Newark, N. J., 1950; L. D. Bristol, Harrisburg, Pa., 1951; Paul B. Magnuson, Washington, D. C., 1951; Robert A. Kehoe, Cincinnati, 1951; Harold A. Vonachen, Peoria, Ill., 1952; W. A. Sawyer, Rochester, N. Y., 1952; James S. Simmons, Boston, 1952; E. J. McCormick, ex officio, Toledo, Ohio; C. M. Peterson, Secretary, Chicago.
COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE (Standing Committee of Board of Trustees)—W. McK. Craig, Rochester, Minn., 1949; Harold S. Diehl, Minneapolis, 1950; Perrin H. Long, Baltimore, 1950; Richard L. Meiling, Columbus, Ohio, 1951; Harold C. Lueth, Omaha, 1951; James C. Sargent, Chairman, Milwaukee, 1952; Stafford Warren, Los Angeles, 1953, and ex officio the President and the Secretary of the Association. Dr. Harold R. Hennessey, Secretary, Chicago.
COMMITTEE ON SCIENTIFIC EXHIBIT—E. J. McCormick, Toledo, Ohio; Dwight H. Murray, Chairman, Napa, Calif.; Gunnar Gundersen, La Crosse, Wis.; Thomas G. Hull, Director, Chicago. Advisory Committee—Howard F. Root, Boston; Paul J. Hanlik, San Francisco; Ludwig Hektorn, Chicago; Urban Maes, New Orleans; Max M. Peet, Ann Arbor, Mich.; James P. Leake, Washington, D. C.

REGISTRATION

The Bureau of Registration will be located on the lower level of the Municipal Auditorium. An information bureau will be operated in connection with the Bureau of Registration.

Who May Register

Only Member and Service Fellows, Affiliate, Associate and Honorary Fellows, qualified physicians who apply for Fellowship, medical students of approved medical schools, who are certified to the Secretary of the Association by their respective deans, or interns or residents who are graduates of approved medical schools who are certified to the Secretary of the Association by the superintendents of their respective hospitals, and Invited Guests may register for the Scientific Assembly. Fellows of the Scientific Assembly are those who have, on the prescribed form, applied for Fellowship, subscribed to *THE JOURNAL*, and paid their 1948 Fellowship dues. Fellowship cards are sent to all Fellows after payment of annual dues and these cards should be presented at the registration window. Any who have not received cards for 1948 should secure them at once by writing to the American Medical Association, 535 North Dearborn Street, Chicago 10.

Members in Good Standing Eligible to Apply for Fellowship in the Association

Members in good standing in the American Medical Association are those members of component county medical societies and of constituent state and territorial medical associations whose names are officially reported for enrolment to the Secretary of the American Medical Association by the secretaries of the constituent medical associations. All members in good standing may apply for Fellowship in the Scientific Assembly and are urged to qualify as Fellows before leaving home in order that pocket cards may be secured and brought to St. Louis so that registration can be more easily and more promptly effected.

Application forms may be had on request.

Those subscribers to *THE JOURNAL* who have not received pocket cards for 1948 should write to the American Medical Association in order to obtain application blanks and information as to further requirements.

Register Early

Fellows living in St. Louis as well as all other Fellows who are in St. Louis on Tuesday and Wednesday should register as early as possible.

The names and local addresses of those who register will be included in the issue of the *Daily Bulletin* appearing the next day, and this will enable visiting physicians to find friends who have registered.

Suggestions That Will Facilitate Registration

Fellows should fill out completely the spaces on both sections of the front of the registration card. Physicians who desire to qualify as Fellows should fill out completely the spaces on both sections of the front of the registration card and sign the application on the back. These cards will be found on the tables.

Entries on the registration card should be written plainly, or printed, as the cards are given to the printer to use as "copy" for the *Daily Bulletin*, which appears on Wednesday, Thursday and Friday mornings during the week of the session.

Fellows who have their pocket cards with them can be registered with little or no delay. They should present the filled out registration card, together with the pocket card, at one of the windows marked "Registration by Pocket Card." There the clerk will compare the two cards, stamp the pocket card and return it and supply the Fellow with a badge and a copy of the official program.

Those Fellows who have sent in their registration card previous to the session should present at any window the identification card sent them after they registered prior to the session.

As previously stated, it will assist in registering if those who desire to qualify as Fellows will file their applications and qualify as Fellows by writing directly to the American Medical Association, 535 North Dearborn Street, Chicago 10.

It will be possible for members of the organization to qualify as Fellows at St. Louis. In order to do this, applicants for Fellowship will be required to fill out both sections of the front of the registration card and to sign the formal application that is printed on the reverse side of the card. It is suggested that those members who apply for Fellowship at St. Louis bring with them their state membership cards for the year 1948. The state membership card should be presented along with the filled in registration card at the window in the booth marked "Applicants for Fellowship and Invited Guests."

As already stated, registration can be effected more easily and more promptly if members will qualify as Fellows before leaving home.

Registration for General Officers and Delegates

General officers of the American Medical Association and members of the House of Delegates may register for the Scientific Assembly outside Assembly Room 2 on the second floor of the Municipal Auditorium on Tuesday, November 30, before registering with the Reference Committee on Credentials and are advised *not* to register at the Registration Bureau since registration cards have already been made out for their use at Assembly Room 2. It will also be possible for them to register on Sunday, November 28, or Monday morning, November 29, in the office of the Secretary of the Association, Room 116, Hotel Statler.

This arrangement is made for the convenience of members of the House of Delegates, which will convene on Tuesday morning at 10 o'clock in Assembly Room 2 of the Municipal Auditorium. Delegates are requested to register for the Scientific Assembly before presenting credentials to the Reference Committee on Credentials of the House of Delegates. Delegates are urged to register early so that all members of the House of Delegates may be seated in time for the opening session of the House.

TRANSPORTATION

It is suggested that those Fellows who contemplate traveling to St. Louis to attend the interim session of the Association secure information concerning railroad and airplane travel

directly from their local ticket agents, who are in a position to give them information regarding train or plane schedules and fares.

ST. LOUIS HOTELS

It is suggested that if hotel reservations have not yet been secured by Fellows who expect to attend the St. Louis session, such Fellows filling in and sending directly to Dr. F. G.

PERNOUD, SUBCOMMITTEE ON HOTELS, 1420 Syndicate Trust Building, St. Louis 1, Mo., the application form which may be found in the advertising pages of this *JOURNAL*.

MEETING PLACES

HOUSE OF DELEGATES: Assembly Room 2, St. Louis Municipal Auditorium.

SCIENTIFIC MEETINGS: Opera House, Assembly Room 1 and rooms in Scientific Exhibit, all in St. Louis Municipal Auditorium.

PRESENTATION OF GENERAL PRACTITIONER'S MEDAL: Opera House, St. Louis Municipal Auditorium.

GENERAL HEADQUARTERS, REGISTRATION BUREAU, SCIENTIFIC EXHIBIT, TECHNICAL EXHIBITS AND INFORMATION BUREAU: St. Louis Municipal Auditorium.

Wednesday evening entertainment in Opera House of Municipal Auditorium, 7:30 p. m.

The St. Louis Municipal Auditorium is located on Fourteenth Street at Market Street.

LOCAL COMMITTEE ON ARRANGEMENTS

Robert E. Schluter, Chairman

Llewellyn Sale, Co-chairman

Robert J. Mueller

William E. Leighton

J. William Thompson

Armand D. Fries

Subcommittee on Hotels

F. G. Pernoud, Chairman

Robert G. Warner

Stephen M. Tapper

Subcommittee on Transportation

Robert F. Hyland, Chairman

Thomas R. Kennedy

Leo A. Will

Subcommittee on Information and Registration

Robert C. McElvain, Chairman

Delevan Calkins

K. V. Larsen

J. Roy Compton

Charles E. Martin

George J. Fuchs

L. A. Millikin

Elmer G. Graul

Grace S. Mountjoy

Otey S. Jones

W. O. Mowrey

Charles A. Jost

S. E. Pawol

Harry A. Klein

C. W. Schumacher

Victor F. Kloepper

William F. Wagenbad

Leon F. Weyerich

Subcommittee on General Meeting

Cyrus E. Burford, Chairman

George F. Rendleman, Charles E. Eimar

Subcommittee on Television

R. Dean Woolsey, Chairman

William A. Knight Jr.

Charles L. Eckert

Samuel Bukants

with the cooperation of

Rev. Alphonse M. Schwitalla and Dr. Robert A. Moore

Subcommittee on Scientific Meetings

Alphonse McMahon, Chairman

Daniel L. Sexton, Co-Chairman

DIABETES

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William H. Olmsted, Chairman

B. Y. Glassberg

Wayne O. Gorla

CANCER

Brewster S. Miller, American Cancer Society, New York, Coordinator

Sherwood Moore, Chairman

POLIOMYELITIS

Catherine Worthingham, National Foundation for Infantile

Paralysis, New York, Coordinator

Sedgwick Mead, Chairman

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O. P. J. Falk, Chairman

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Leroy Sante

PHYSICAL MEDICINE AND ARTHRITIS

C. H. Slocumb, Rochester, Minn., Coordinator

Ralph A. Kinsella, Chairman

HOUSE OF DELEGATES

The House of Delegates will meet at 10 a. m., Tuesday, Nov. 30, 1948, in Assembly Room 2, Municipal Auditorium, Fourteenth Street at Market Street.

The Reference Committee on Credentials will meet in the foyer outside Assembly Room 2 at 8:30 a. m., Tuesday, Nov. 30, 1948. Credentials should be presented to the Reference Committee on Credentials as early as possible, so that the official roll of the House may be made up and so that the House of Delegates may organize promptly and proceed with its business. The Reference Committee on Credentials will also meet preceding each subsequent meeting of the House of Delegates.

Each delegate should present properly executed credentials signed by the president and the secretary of the constituent association or by the chairman and the secretary of the section he represents. Alternates presenting credentials should see that the delegates whose places they are to take have signed the alternate authorization.

Each delegate, before registering with the Reference Committee on Credentials, should register for the Scientific Assembly at a booth located at the head of the stairs leading to the lobby where the Reference Committee on Credentials will register delegates.

Rooms have been provided for the use of committees of the House of Delegates. Reference committees are urged to have their meetings in these rooms and to announce the time of their meetings, so that any who are interested in matters referred may be able to appear before the committees.

Typists will be at the service of the members of the House of Delegates for preparing official reports, resolutions and motions.

There should be eight copies of all reports of committees, resolutions, written motions, etc., presented in the House, one copy for preservation in the minutes, six to go to the committee to which the matter may be referred and one to be used as "copy" for the Proceedings. The eight copies must be handed to the Secretary at the time the matter is presented. Typists in attendance will gladly make these copies on request.

MEETING ROOMS OF REFERENCE COMMITTEES IN THE MUNICIPAL AUDITORIUM

Reference Committee on—

- Amendments to the Constitution and By-Laws Committee Room B(1), Second Floor
- Hygiene and Public Health.....Committee Room A, Second Floor
- Legislation and Public Relations Committee Room B(2), Second Floor
- Medical Education Room HD2, Mezzanine, between second and third floors
- Miscellaneous Business..Committee Room 3D, Third Floor
- Reports of Board of Trustees and Secretary.....Committee Room 3A, Third Floor
- Reports of Officers.....Committee Room 3C, Third Floor
- Rules and Order of Business.....Committee Room 4C, Fourth Floor
- Sections and Section Work.....Committee Room, 4A, Fourth Floor
- Executive Session.....Committee Room 3B, Third Floor
- Special.....Committee Rooms 4B and 4D Fourth Floor

MEMBERS OF HOUSE OF DELEGATES, INTERIM SESSION, 1948

The following is a list of members of the House of Delegates:

- ALABAMA—2
 - B. W. McNease.....Fayette
 - Daniel G. Gill.....Montgomery
- ARIZONA—1
 - Jesse D. Hamer.....Phoenix

ARKANSAS—2

- D. A Rhinehart.....Little Rock
- William R. Brooksher.....Fort Smith

CALIFORNIA—9

- H. Gordon MacLean.....Oakland
- E. Vincent Askey.....Los Angeles
- John W. Cline.....San Francisco
- Donald Cass.....Los Angeles
- Ralph B. Eusden.....Long Beach
- Robertson Ward.....San Francisco
- Samuel J. McClendon.....San Diego
- Lowell S. Goin.....Los Angeles
- John W. Green.....Vallejo

COLORADO—2

- Herman C. Graves.....Grand Junction
- William H. Halley.....Denver

CONNECTICUT—3

- Joseph H. Howard.....Bridgeport
- Creighton Barker.....New Haven
- Thomas P. Murdock.....Meriden

DELAWARE—1

- James Beebe.....Lewes

DISTRICT OF COLUMBIA—2

- C. B. Conklin.....Washington
- Herbert P. Ramsey.....Washington

FLORIDA—2

- Homer Lee Pearson Jr.....Miami
- Louis M. Orr II.....Orlando

GEORGIA—3

- Olin H. Weaver.....Macon
- Allen H. Bunce.....Atlanta
- Benjamin H. Minchew.....Waycross

IDAHOO—1

- Hoyt B. Woolley.....Idaho Falls

ILLINOIS—9

- Robert H. Hayes.....Chicago
- Fred H. Muller.....Chicago
- Bernard Klein.....Joliet
- Mather Pfeiffenberger.....Alton
- E. H. Weld.....Rockford
- Rollo K. Packard.....Chicago
- Charles H. Phifer.....Chicago
- G. Henry Mundt.....Chicago
- Willis I. Lewis.....Herrin

INDIANA—4

- H. G. Hamer.....Indianapolis
- A. S. Giordano.....South Bend
- William M. Cockrum.....Evansville
- F. S. Crockett.....Lafayette

IOWA—3

- Gerald V. Caughlan.....Council Bluffs
- Thomas F. Thornton.....Waterloo
- George Braunlich.....Davenport

KANSAS—2

- Philip W. Morgan.....Emporia
- John M. Porter.....Concordia

KENTUCKY—2

- Clark Bailey.....Harlan
- J. B. Lukins.....Louisville

LOUISIANA—2

- Val H. Fuchs.....New Orleans
- James Q. Graves.....Monroe

MAINE—1

- Thomas A. Foster.....Portland

MARYLAND—2

- Jacob W. Bird.....Sandy Spring
- Warde B. Allan.....Baltimore

MASSACHUSETTS—6

- Charles J. Kickham.....Brookline
- L. S. McKittrick.....Boston
- Patrick J. Sullivan.....Dalton
- John J. Curley.....Leominster
- Walter G. Phippen.....Salem
- Frank W. Snow.....Newburyport

MICHIGAN—5

L. G. Christian.....Lansing
William A. Hyland.....Grand Rapids
Wyman D. Barrett.....Detroit
T. K. Gruber.....Eloise
Claude R. Keyport.....Grayling

MINNESOTA—4

W. A. Coventry.....Duluth
J. C. Hultkrans.....Minneapolis
E. W. Hansen.....Minneapolis
Francis J. Savage.....St. Paul

MISSISSIPPI—1

James P. Wall.....Jackson

MISSOURI—4

Robert E. Schluter.....St. Louis
James R. McVay.....Kansas City
Howard B. Goodrich.....Hannibal
Warren L. Allee.....Eldon

MONTANA—1

Raymond F. Peterson.....Butte

NEBRASKA—2

Karl S. J. Hohlen.....Lincoln
Joseph D. McCarthy.....Omaha

NEVADA—1

Roland W. Stahr.....Reno

NEW HAMPSHIRE—1

Deering G. Smith.....Nashua

NEW JERSEY—5

J. Wallace Hurff.....Newark
Thomas K. Lewis.....Camden
Joseph F. Londrigan.....Hoboken
William F. Costello.....Dover
David B. Allman.....Atlantic City

NEW MEXICO—1

John F. Conway.....Clovis

NEW YORK—20

Walter P. Anderton.....New York
Herbert H. Bauckus.....Buffalo
Albert F. R. Andresen.....Brooklyn
Thomas M. Brennan.....Brooklyn
James R. Reuling.....Bayside
Floyd S. Winslow.....Rochester
Ralph T. B. Todd.....Tarrytown
O. W. H. Mitchell.....Syracuse
Edward P. Flood.....New York
Albert A. Gartner.....Buffalo
John J. Masterson.....Brooklyn
J. Stanley Kenney.....New York
Thomas A. McGoldrick.....Brooklyn
Andrew A. Eggston.....Mount Vernon
Harry Aranow.....New York
Peter J. DiNatale.....Batavia
George W. Kosmak.....New York
Stephen R. Monteith.....Nyack
Joseph P. Henry.....Rochester
S. L. Smith.....Poughkeepsie

NORTH CAROLINA—3

R. D. McMillan.....Red Springs
C. F. Strosnider.....Goldsboro
Ross S. McElwee.....Statesville

NORTH DAKOTA—1

John H. Moore.....Grand Forks

OHIO—7

L. Howard Schriver.....Cincinnati
Clifford C. Sherburne.....Columbus
Frank M. Wiseley.....Findlay
Edgar P. McNamee.....Cleveland
Carl A. Lincke.....Carrollton
George A. Woodhouse.....Pleasant Hill
William M. Skipper.....Youngstown

OKLAHOMA—2

Charles R. Rountree.....Oklahoma City
James Stevenson.....Tulsa

OREGON—2

Raymond M. McKeown.....Coos Bay
Edward H. McLean.....Oregon City

PENNSYLVANIA—10

William Bates.....Philadelphia
Francis F. Borzell.....Philadelphia
Walter F. Donaldson.....Pittsburgh
Charles L. Shafer.....Kingston
William L. Estes Jr.....Bethlehem
James L. Whitehill.....Rochester
George S. Klump.....Williamsport
Elmer Hess.....Erie
James Z. Appel.....Lancaster
E. R. Samuel.....Mount Carmel

RHODE ISLAND—1

Herman A. Lawson.....Providence

SOUTH CAROLINA—1

Hugh P. Smith.....Greenville

SOUTH DAKOTA—1

H. Russell Brown.....Watertown

TENNESSEE—2

H. B. Everett.....Memphis
Robert B. Wood.....Knoxville

TEXAS—5

Howard R. Dudgeon.....Waco
B. E. Pickett Sr.....Carrizo Springs
E. H. Cary.....Dallas
F. J. L. Blasingame.....Wharton
Allen T. Stewart.....Lubbock

UTAH—1

James P. Kerby.....Salt Lake City

VERMONT—1

Theodore H. Harwood.....Burlington

VIRGINIA—2

Henry B. Mulholland.....Charlottesville
J. Morrison Hutcheson.....Richmond

WASHINGTON—2

Donald G. Corbett.....Spokane
Raymond L. Zech.....Seattle

WEST VIRGINIA—2

Walter E. Vest.....Huntington
Ivan Fawcett.....Wheeling

WISCONSIN—3

William D. Stovall.....Madison
Stephen E. Gavin.....Fond du Lac
James C. Sargent.....Milwaukee

WYOMING—1

George P. Johnston.....Cheyenne

ALASKA—1

Paul B. Haggland.....Fairbanks

HAWAII—1

Forrest J. Pinkerton.....Honolulu

ISTHMIAN CANAL ZONE—1

Harry Eno.....Christobal

PUERTO RICO—1

Carlos E. Munoz-MacCormick.....Santurce

DELEGATES FOR SECTIONS

INTERNAL MEDICINE

Charles T. Stone.....Galveston, Texas

SURGERY, GENERAL AND ABDOMINAL

Grover C. Penberthy.....Detroit

OBSTETRICS AND GYNECOLOGY

Jean Paul Pratt.....Detroit

OPHTHALMOLOGY

Sylvester Judd Beach.....Portland, Maine

LARYNGOLOGY, OTOTOLOGY AND RHINOLOGY

Burt R. Shurly.....Detroit

PEDIATRICS

William Weston.....Columbia, S. C.

EXPERIMENTAL MEDICINE AND THERAPEUTICS

Edgar V. Allen.....Rochester, Minn.

PATHOLOGY AND PHYSIOLOGY

L. W. Larson.....Bismarck, N. D.

NERVOUS AND MENTAL DISEASES

Hans H. F. Reese.....Madison, Wis.

DERMATOLOGY AND SYPHILOLOGY

Everett C. Fox.....Dallas, Texas

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH

Stanley H. Osborn.....Hartford, Conn.

UROLOGY

Roy B. Henline.....New York

ORTHOPEDIC SURGERY

Edward L. Compere.....Chicago

GASTRO-ENTEROLOGY AND PROCTOLOGY

Louis A. Buie.....Rochester, Minn.

RADIOLOGY

B. R. Kirklin.....Rochester, Minn.

ANESTHESIOLOGY

Henry S. Ruth.....Haverford, Pa.

GENERAL PRACTICE

Howard E. Griffin.....Graham, Texas

GOVERNMENT SERVICES

United States Army.....George E. Armstrong

United States Navy.....Joel T. Boone

United States Public Health Service.....W. Palmer Dearing

PERSONNEL OF REFERENCE COMMITTEES
FOR THE ST. LOUIS SESSION

SECTIONS AND SECTION WORK

Henry S. Ruth, Chairman, Section on Anesthesiology
 Jean Paul Pratt, Section on Obstetrics and Gynecology
 Benjamin H. Minchew, Georgia
 Homer L. Pearson Jr., Florida
 Thomas A. Foster, Maine

RULES AND ORDER OF BUSINESS

Philip W. Morgan, Chairman, Kansas
 Stephen R. Monteith, New York
 Edward H. McLean, Oregon
 Ivan Fawcett, West Virginia
 Wyman D. Barrett, Michigan

MEDICAL EDUCATION

George W. Kosmak, Chairman, New York
 William Bates, Pennsylvania
 Mather Pfeifferberger, Illinois
 Louis A. Buie, Section on Gastro-Enterology and Proctology
 Warde B. Allan, Maryland

LEGISLATION AND PUBLIC RELATIONS

Thomas K. Lewis, Chairman, New Jersey
 Edgar P. McNamee, Ohio
 John W. Cline, California
 Charles H. Phifer, Illinois
 Edward H. Cary, Texas

HYGIENE AND PUBLIC HEALTH

Stanley H. Osborn, Chairman, Section on Preventive and
 Industrial Medicine and Public Health
 W. Palmer Dearing, U. S. Public Health Service
 Gerald V. Caughlan, Iowa
 George S. Klump, Pennsylvania
 Albert F. R. Andresen, New York

AMENDMENTS TO CONSTITUTION AND BY-LAWS

Lowell S. Goin, Chairman, California
 James P. Wall, Mississippi
 William R. Brooksher, Arkansas
 Floyd S. Winslow, New York
 Val H. Fuchs, Louisiana

REPORTS OF OFFICERS

James Z. Appel, Chairman, Pennsylvania
 Joshua B. Lukins, Kentucky
 Rollo K. Packard, Illinois
 Deering G. Smith, New Hampshire
 E. Vincent Askey, California

REPORTS OF BOARD OF TRUSTEES AND SECRETARY

Creighton Barker, Chairman, Connecticut
 Lloyd Noland, Alabama
 Samuel J. McClendon, California
 Hans H. F. Reese, Section on Nervous and Mental Diseases
 Fred H. Muller, Illinois

CREDENTIALS

Hiram B. Everett, Chairman, Tennessee
 Carl A. Lincke, Ohio
 Edward P. Flood, New York
 Raymond F. Peterson, Montana
 Charles F. Strosnider, North Carolina

MISCELLANEOUS BUSINESS

Joseph D. McCarthy, Chairman, Nebraska
 Herbert H. Bauckus, New York
 Britton E. Pickett Sr., Texas
 James P. Kerby, Utah
 J. Wallace Hurff, New Jersey

EXECUTIVE SESSION

J. Stanley Kenney, Chairman, New York
 Jesse D. Hamer, Arizona
 Claude R. Keyport, Michigan
 Erling W. Hansen, Minnesota
 Walter G. Phippen, Massachusetts

SERGEANTS-AT-ARMS

James L. Whitehill, Chairman, Pennsylvania
 Herman A. Lawson, Assistant, Rhode Island
 Hugh P. Smith, Assistant, South Carolina

TELLERS

Roland W. Stahr, Chairman, Nevada
 John F. Conway, New Mexico
 John H. Moore, North Dakota
 William M. Skipp, Ohio
 James Stevenson, Oklahoma

Order of Business

(Subject to change by action of the House of Delegates)

TUESDAY, NOVEMBER 30, 10 A. M.

1. Call to Order by the Speaker.
2. Preliminary Report of the Reference Committee on Credentials.
3. Roll Call.
4. Selection of Recipient of General Practitioner's Award.
5. Presentation, Correction and Adoption of Minutes of the Annual Session held in June, 1947.
6. Speaker's Remarks and Confirmation of Appointments to Reference Committees.
7. Remarks of President.
8. Introduction of President-Elect.
9. Reports of Officers.
10. Reports of Committees.
11. Unfinished Business.
12. New Business.

WEDNESDAY, DECEMBER 1, 1:15 P. M.

1. Supplementary Report of Reference Committee on Credentials.
2. Reading and Adoption of Minutes.
3. New Business.
4. Executive Session.
5. Reports of Reference Committees and Other Unfinished Business.

REPORTS OF OFFICERS

REPORT OF THE SECRETARY

To the Members of the House of Delegates of the American Medical Association:

The following report of the Secretary is respectfully submitted:

MEMBERSHIP AND FELLOWSHIP

Heretofore in making annual reports of membership and Fellowship, the Secretary has reported the number of members and Fellows as of March 1 or April 1. Now that the House of Delegates has decided to receive annual reports only at its interim sessions, and also since the revised Constitution and By-Laws adopted at the 1948 annual session provides that the appointment of delegates shall be made annually in accordance with the number of members in each constituent association as of December 1, in 1949 and thereafter it will be possible to present the usual comparative table showing the organization of constituent associations on December 1. The current report covers the nine month period from Jan. 1 to Oct. 1, 1948.

On Jan. 1, 1948, 135,518 physicians were members of the American Medical Association and 76,278 were Fellows. On October 1 the membership roll contained 139,776 names and the number of names on the Fellowship roster had increased to 78,331. The increase in membership over the nine month period was 4,258, and that in Fellowship was 2,053. Thus, the Association continues to grow in strength of numbers.

Steps have been taken to procure the names of physicians who are members of the permanent medical staff of the Veterans Administration in order that, in accordance with the action of the House of Delegates in June, their names may be entered as those of Service Fellows of the American Medical Association in the same manner as are the names of the regular medical officers of the Army, Navy and Public Health Service. The complete roster of Veterans Administration physicians is not yet available. It is anticipated that when the names are received there will be a substantial increase in the number of names on the Fellowship roster.

FIELD ACTIVITY

During the year 1948 the Secretary has visited constituent medical associations in seven states and one territory, namely; California, Texas, New York, Wyoming, Colorado, Kentucky, Wisconsin and Hawaii. With the exception of the visit to the Hawaii Territorial Medical Association, these visits have all been made at the time of annual meetings, and the Secretary has spoken at each meeting on the work and accomplishments of the American Medical Association. In addition, the Secretary is a member of a number of committees of government and other agencies in the medical field and has attended numerous meetings in various places. In all cases, trips away from the office have been arranged so as not to conflict with the regular business of the Association, and that has been easier to accomplish this year because the Assistant Secretary, Dr. Ernest B. Howard, has been available at all times in the absence of the Secretary.

RÉSUMÉ OF MATTERS REFERRED BY HOUSE OF DELEGATES

Through his own office or by reference to the proper departments at headquarters, the Secretary has carried out the mandates of the House of Delegates at the Chicago Session as follows:

Resolution on Method of Selecting Each Year the Outstanding General Practitioner by the American Medical Association:

A letter incorporating this resolution was sent to the secretary of each constituent state and territorial medical association.

Resolutions on American Physicians Art Association: These resolutions were transmitted in a letter to the secretary of that organization.

Election of Honorary Fellows: Appropriate letters accompanied by Certificates were sent to the three foreign physicians elected to Honorary Fellowship.

Recommendation that Constituent Associations Set Terms of Delegates to Begin on January 1 Following Elections: The revised Constitution and By-Laws solves this problem. The attention of each state and territorial association secretary has been called to the change, and the information has been further disseminated through the Secretary's Letter.

Resolutions on Paying Physicians Engaged in Examinations for Armed Forces: A letter conveying these resolutions was sent to the Director of the Selective Service System. His reply is contained in the Report of the Board of Trustees.

Resolution on Policy of Federal Children's Bureau: This resolution was transmitted in a letter to Hon. Oscar R. Ewing, Federal Security Administrator, and his reply will be found in the Report of the Board of Trustees.

Resolution Requesting Veterans Administration to Put into Uniform Practice a Free Choice Regulation for Medical and Hospital Treatment: A letter concerning this was sent to the Chief Medical Director of the Veterans Administration.

Resolution on Funds to Defray Expenses of Woman's Auxiliaries of States: The secretary of each state association received a letter calling attention to this resolution.

Resolutions on Advancement in Rank of Surgeons General of Army and Navy and of Air Surgeon: Letters transmitting these resolutions were sent to the President, the Secretary of Defense, the Secretaries of the Army, Navy and Air Force and the members of the Committee on Armed Services of the Senate and the House of Representatives. Acknowledgments have been received from most of those to whom the communication was sent.

Resolution on Staff Personnel at Headquarters: Employees have been advised that they cannot take either a positive or a negative stand on any legislative matter pending before the House of Delegates.

Recommendations contained in the Report of the Committee to Study Conditions of General Practice and in the Report of the Committee on Intern Placement, and the Resolutions on Association of Interns and Medical Students and on Shortage of Interns are referred to in the Report of the Council on Medical Education and Hospitals.

A report of action with respect to the Resolution on Compulsory Cash Sickness Compensation (the "Rhode Island Resolution") is included in the Report of the Council on Medical Service and the Report of the Board of Trustees.

Resolutions on Hospital Exploitation of Medical Services and the Resolution on Approval of Hospitals were referred to the Committee on Hospitals and the Practice of Medicine, Dr. Elmer Hess, Pennsylvania, Chairman.

Bureau of Legal Medicine and Legislation instructed to study the laws of the several states to determine whether a corporation may lawfully practice medicine: The Bureau now has under way a comprehensive study.

The intent of the resolution concerning the interest of the American Medical Association in a medical graduate program in the armed forces, the resolution commending the Secretary of Defense for appointment of a Committee on Medical and Hospital Services of the Armed Forces, and the resolution urging appointment of a Civilian Medical Coordinating Board to advise the National Security Resources Board was transmitted to the President, the Secretary of Defense and the Secretaries of the Army, Navy and Air Force before the close of the Chicago Session.

Resolutions on Emergency Medical Service: The Council on National Emergency Medical Service is engaged in efforts to carry out the intent of these resolutions.

The following resolutions have been referred to the Board of Trustees, and reference to them will be found in the Report of the Board: Resolutions on Federal Grants-In-Aid to States; Resolution on Compulsory Cash Sickness Compensation; Resolution on Cancer Detection Centers.

RESOLUTIONS AND MEMORIALS

No resolutions or memorials for presentation to the House of Delegates at the interim session have been received from any delegate or any constituent association.

IN APPRECIATION

The Secretary wishes to express his grateful appreciation for the many courtesies extended to him throughout the year by the officers, delegates, members of councils and committees and members and Fellows. The Office of the Secretary of the American Medical Association is open at all times to any member who may wish to visit it.

The Secretary wishes to express particularly his appreciation of the fine and loyal service extended by so many employees at the headquarters office during a trying year.

Respectfully submitted,

GEORGE F. LULL, Secretary.

REPORT OF THE BOARD OF TRUSTEES

To the Members of the House of Delegates of the American Medical Association:

The following annual report of the Board of Trustees is respectfully submitted to the House of Delegates.

Income and Expenditures

At the Cleveland Interim Session of the House of Delegates Fellowship dues and subscriptions to THE JOURNAL were increased from \$8 to \$12. This increase was necessary in order to balance the budget for 1948; a deficit for 1947 was already realized.

Recapitulation

	1948	1947	1946	1945
Income exhibit A.....	\$3,614,000	\$3,061,802	\$3,076,612	\$2,909,914
Expense exhibit B.....	3,446,007	3,112,649	2,970,241	1,919,206
Gain.....	167,993		106,369	990,708
Loss.....		50,817		

A Report of Income in Years Indicated

	1948 Partly Estimated	1947 Actual	1946 Actual	1945 Actual
Fellowship and sub- scriptions	G* \$1,450,427	G \$ 936,844	G \$ 987,077	G \$ 868,034
Advertising J.A.M.A.	G 2,175,000	G 2,016,913	G 1,772,508	G 1,664,878
Sundry printing and insignia sales.....	G 35,867	G 44,026	G 55,533	G 56,815
Income and gains or losses from sale of investments	G 133,024	G 133,790	G 207,591	G 122,821
Sessions	G 8,481	L 61,334	G 5,264	L 5,400
Printing and publish- ing special journals, index and Hygiene..	L† 158,708	L 68,337	G 48,634	G 202,755
Total.....	\$3,614,000	\$3,061,802	\$3,076,612	\$2,909,914

* Gain. † Loss.

A Report of Expenses for Year Indicated

	1948 Partly Estimated	1947 Actual	1946 Actual	1945 Actual
Councils, Bureaus, Committees and Secretary's Office.....	\$1,109,704	\$1,128,427	\$ 890,178	\$ 537,611
Journal operating expenses.....	2,050,730	1,813,776	1,570,209	1,235,540
Taxes, annuities and legal; 1946 includes settlement for retro- active payment of unemploy- ment tax to state of Illinois..	196,173	170,446	509,757	146,033
Total.....	\$3,446,607	\$3,112,649	\$2,970,244	\$1,919,206

Expenditures for Selected Items in Year Indicated

	1948 Partly Estimated	1947 Actual	1946 Actual	1945 Actual
Wages and salaries.....	\$2,400,864	\$2,347,671	\$1,916,310	\$1,342,149
Paper stock.....	600,000	554,972	422,060	298,666
Engravings.....	116,000	68,554	57,004	45,326
Building maintenance.....	85,474	79,924	70,424	45,994
Postage, first class.....	76,759	94,468	70,866	48,022
Postage, second class.....	75,963	95,315	83,609	60,479

This increase has been the means of keeping the Association's financial head above water. Increases in wages, salaries, material and services have caused a considerable increase in expenditures.

Following are figures showing sums expended for the major activities of the Association in 1948 (estimated), compared with amounts expended in 1945, 1946 and 1947 for similar activities, as well as a comparison of receipts in these years:

The Journal of The American Medical Association

The circulation of THE JOURNAL continues to be maintained at its peak. The JAMA, as it is called in Europe, is recognized everywhere as the leading medical periodical. Through recommendation by the State Department, it is now published regularly in a condensed edition in the Japanese language, and negotiations have been proposed to publish a condensed edition in Italian and in Spanish.

So numerous are the requests for exchange with THE JOURNAL from publications in other countries that it has become necessary to restrict the exchange list rigidly.

With the availability of many foreign periodicals, the Current Medical Literature columns are being enlarged and more abstracts of original articles are being published.

The Foreign Correspondence in THE JOURNAL has been elaborated further.

Special issues are regularly devoted to medical education, hospitals, state board licensure, the Annual Session, the Interim Session and the indexes.

The columns of THE JOURNAL have been so pressed for space that the Editor welcomes the new action of the Council on Scientific Assembly in restricting some of the sections, which are now numerous, to two meetings instead of three meetings at a session.

The Councils, Bureaus, Committees and departments of the Association are now so numerous that they constitute a special problem with relationship to space in THE JOURNAL. The Board of Trustees has under consideration a special publication to be devoted largely to the social, economic and industrial aspects of medicine. Nevertheless, THE JOURNAL is the one publication most widely read by the medical profession as shown by innumerable surveys and the activities of these various agencies are so important that they should be kept constantly before the medical profession.

During 1947-1948 THE JOURNAL published a series of articles on cancer in cooperation with the American Cancer Society. These attracted major interest and are now in process of being published in book form. A series of articles is also in process on nutrition, and these too will be published in book form when completed.

The weekly average net paid circulation of THE JOURNAL and the weekly average of copies printed cannot be reported at this time, since the necessary figures will not be compiled until after the first of the year. However, the reports as of Sept. 1, 1948, show that on that date the number of copies circulated was 142 less than on Jan. 1, 1948.

FIELD SERVICE OF THE EDITORIAL STAFF

Many calls come to the editorial staff of the American Medical Association for addresses on a variety of subjects to audiences of both the medical profession and the public. They participate also in educational courses before various medical societies and educational institutions.

Special Journals

During the time of the labor difficulties with Local 16, Chicago Typographical Union, March 8 to June 28, the publication of the special journals was suspended. As negotiations with the Union seemed to be unsuccessful and it appeared that the difficulties might continue indefinitely, arrangements were made with a Tennessee concern to publish the special journals. Since May manuscripts have been sent to Tennessee to be put into type. Thus far three issues have been printed and distributed.]

from Nashville, but eight additional issues are in course of completion.

In August it was decided to bring three of the periodicals back to the Association's plant, the ARCHIVES OF SURGERY, the ARCHIVES OF OPHTHALMOLOGY and OCCUPATIONAL MEDICINE. With the two plants working on the periodicals, the usual schedules should be reached by the end of the year.

In spite of the labor difficulties and a shortage of help in the Editorial Department, every effort has been made to maintain the high quality of the periodicals. Two additional manuscript editors have recently been added to the staff.

A supplement to the March issue of the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY was published containing society transactions only because the reports of fourteen dermatologic societies are received for publication in that periodical. Most of these societies hold nine meetings a year, which means that over one hundred reports are received each year. Many of the reports have been so long that during the paper shortage a considerable backlog occurred. The Editorial Board is now culling unimportant material from these reports, and after the publication of another supplement this fall it will be possible to keep up to date with the publication of the reports of these societies.

The September issue of the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY will be a festschrift in honor of Dr. George Miller MacKee.

According to the estimates made by the Accounting Department, there will be a gain for the year of \$35,733 on five of the special journals and a loss of \$21,918 on the other four, making a net gain of \$13,815 on the nine journals.

Standard Nomenclature of Disease and Standard Nomenclature of Operations

The success of this publication has been outstanding. A new committee has been organized to produce a new edition of the Standard Nomenclature, and Dr. George Baehr, who served as chairman of the previous committee, will be chairman of the new committee. The remaining members of the committee include:

Dr. James R. Miller, Hartford, Conn.
Dr. Halbert L. Dunn, Washington, D. C.
Dr. Selwyn E. Collins, Washington, D. C.
Dr. Edward T. Thompson, Chicago.
Dr. Edwin L. Crosby, Baltimore.
Dr. Morris Fishbein, Chicago.
Dr. R. J. Plunkett, Chicago.
Mrs. Adaline Hayden, Chicago.

This committee will hold its meeting in December 1948 and at that time will organize the development of the new edition. The Standard Nomenclature is used throughout the world, and translations have been made into Portuguese.

Hygeia

HYGEIA is the leading publication in the health field in the United States. As a source for authentic material, it is used by schools, educational groups, industrial organizations, lecturers and voluntary health organizations. HYGEIA is more quoted by various digest magazines than any other publication in the United States. Many newspapers and radio stations also utilize HYGEIA as a source of material. HYGEIA has aided campaigns against poliomyelitis, cancer and heart disease and for the improvement of sanitation. The American Red Cross has cooperated with articles regularly published in HYGEIA. A special section has been developed dealing with child care and behavior.

Over a period of more than twenty-five years HYGEIA has yielded a profit to the Association. However, the periodical is published as an educational, philanthropic venture and not with the idea primarily of producing income. In 1947, for the first time in seven years, HYGEIA had a loss. It now has, however, a new high in circulation, and much of the loss represents funds expended to increase circulation.

Because of the demands on the press of the American Medical Association it has been impossible to continue printing the publication on the American Medical Association press. It is now printed by Kable Brothers in Mount Morris, Ill.

Book Publications

The American Medical Association press has in the past issued many books which have attained large circulation among the medical profession. Some of these books represent compilations of series of articles published in THE JOURNAL; others originated with individual Councils and Bureaus of the Association. The increasing demands made on the press of the Association made it impossible to continue to publish such books, and they are, therefore, published under the auspices of the Association by independent publishers.

Library

Demands for library service from members of the Association increased considerably during 1948. Approximately 2,500 package libraries were provided and about 250 requests were denied service because of nonmembership in the Association. The most popular requests for the year were for information on the new antibiotics, new drugs, anesthetics, alcoholism and undulant fever.

The periodical lending service continued to be as popular as it has for many years past. Approximately 10,000 journals were sent out on loan. The various Veterans Administration libraries throughout the country have continued to call on the library with increasing demands for its type of library service.

Requests for the establishment of exchanges from publications issued in foreign countries with publications of the American Medical Association decreased somewhat during the year.

Three volume indexes of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION were prepared, as usual, in the library. Unfortunately, because of the printing situation, indexes for volumes 136 and 137 were not published in the final issues of those volumes for the first time in the history of the publication. A return to the usual schedule of publishing the index of THE JOURNAL in the final issue of volume 138, covering September-December, 1948, is anticipated.

Quarterly Cumulative Index Medicus

Despite every effort to resume publication of the QUARTERLY CUMULATIVE INDEX MEDICUS on schedule, the progress made in 1948 was disappointing. Volume 41 of the INDEX, covering January-June 1947, was distributed to subscribers about May 1, 1948. This volume represents the only one completed during the year. Volume 42, July-December, 1947, has been entirely put into type, but the completion of publication and distribution to subscribers cannot be hoped for until early in 1949.

Because of the tremendous demand for extra copies of the QUARTERLY CUMULATIVE INDEX MEDICUS now out of print, 300 additional copies were reproduced covering each of the volumes from 1 to 24. Most of these have already been sold, and maintenance of a stock of approximately 100 copies of each of the volumes of the QUARTERLY has been authorized.

World Medical Association

A complete report on the present status and activities of the World Medical Association was printed in the Organization Section of THE JOURNAL for Oct. 9, 1948. Since the members of the House of Delegates undoubtedly are familiar with the content of the report, it does not appear to be necessary to include it here. Copies of JOURNAL pages will be available at the interim session for the purposes of reference committees.

Consultants for General MacArthur

In 1947 General Douglas MacArthur requested, through government channels, the services of certain experts to aid him in revising and reestablishing Japanese social security laws including sickness insurance. The experts furnished were for the most part persons who were federal employees and ardent proponents of compulsory sickness insurance. The Board of

Trustees complained about this situation, and as a result General MacArthur requested that a group of representatives of the American Medical Association be sent to Japan on a consultant status.

Drs. E. L. Henderson, Ernest E. Irons, R. L. Sensenich, Edward J. McCormick and John H. Fitzgibbon were appointed consultants and visited Japan in the late summer. The report in full will be made to General MacArthur and, when released by him, will be given space in *THE JOURNAL*.

The Ewing Report

Under a release date of Sept. 2, 1948, the Ewing Report to the President on "The Nation's Health, A Ten Year Program" was given to the public. This report devotes considerable space to a plea for government medical care supported by a compulsory taxation system. The report appears to be purely politically inspired, and little space should be given to it here. While the medical profession as a whole may take this report for what it is worth, there are many lay persons who will be convinced of the merit of some of the recommendations. It is hoped that every physician will familiarize himself with the principal features so that he may be able to turn the searchlight of truth and understanding on it.

National Health Assembly

Early in the year the Federal Security Administrator, Hon. Oscar R. Ewing, at the suggestion of the President, called a large meeting of both lay and professional persons who were interested in health affairs. The Association was represented by the President, the President-Elect and the Secretary, the latter of whom served as a member of the Executive Committee of the Assembly. In the various sections and panels, officers and Fellows of the Association played important roles. An analysis of the registrants at the National Health Assembly, which was held May 1-4, shows that 33 persons representing the American Medical Association directly or indirectly were present. In addition there were 66 other physicians out of a total registration of approximately 350.

Matters Referred by House of Delegates

Resolution on Cancer Detection Centers: The Board of Trustees is cooperating with the American Cancer Society in accordance with the provisions of this resolution.

Resolutions on Federal Grants-In-Aid to States: Careful consideration has been given these resolutions by the Board of Trustees, and the Board will continue to scrutinize pending legislation which does not contain the principle that federal grants-in-aid should not be extended to any state which has not clearly demonstrated an absolute need for federal assistance.

Resolution on Compulsory Cash Sickness Compensation: This resolution expressed dissatisfaction that a study had not been conducted of the Rhode Island Cash Sickness Benefits Program as requested in a resolution presented to the House of Delegates in 1946. The 1946 resolution was brought to the attention of the Council on Medical Service early in 1947, and since that time the Council has followed carefully the developments in regard to this type of legislation throughout the United States. Reports were submitted to the House of Delegates in June 1947, January 1948 and June 1948, as follows:

June, 1947: Interest in and legislation concerning insurance against loss of wages during sickness indicate a need for a study of the subject. The Board of Trustees has referred the matter to the Council.

January, 1948: The Council continues to follow legislative developments in the various states and has made it a point to maintain a liaison with the Railroad Retirement Board in regard to cash sickness benefits. At the time of the June session the Council reported on the introduction of thirty-two "cash sickness" bills in the legislatures of thirteen states. Since then eleven bills have been added, making a total of some forty-three bills introduced in sixteen state legislatures. These bills generally provide for the establishment of a system of sickness benefits

or "health insurance." The growth in interest in this type of legislation is shown by the fact that only ten bills were introduced in state legislatures in 1935-1936, as compared to thirty-nine in 1945 and forty-three in 1947.

June, 1948: The House of Delegates approved the principle of cash sickness benefits in 1938. Since that time interest in the subject, particularly on the part of state legislatures, has developed rapidly. Fifty proposals for cash sickness and related benefits were introduced in state legislatures in 1947. Of this number, twenty-five provided for specific cash state fund, with affiliation compulsory. The implications of this type of program warrant serious consideration. The House of Delegates recognized this when it approved a resolution requesting "a complete study of the existing and proposed compulsory temporary disability compensation programs." The resolution was referred to the Council on Medical Service, and since then the staff has followed closely the developments in various states. These developments were reported to the House in June 1947 and in January 1948.

The Council has postponed a detailed study until experience from more than one type of program can be obtained and compared. The Rhode Island (monopolistic) plan has been in operation over five years, the California (optional) plan over one year and the Railroad Retirement Board (national) plan almost a year. Studies of these three, together with a number of the proposed plans, should provide a reasonable appraisal of the subject. A study of the Rhode Island plan has recently been completed by Miss Elizabeth Wilson, and arrangements have been made to have access to the results of the study. Studies of the two other plans will be undertaken in cooperation with the Bureau of Medical Economic Research unless the Council discovers existing studies comparable to that of Miss Wilson. The Council is primarily interested in the medical aspects of cash sickness benefit programs and will make every effort to arrive at definite recommendations.

Resolutions on Paying Physicians Engaged in Examinations for the Armed Forces: These resolutions were transmitted in a letter to Mr. Lewis B. Hershey, Director of the Selective Service System, who replied as follows:

"This acknowledges your letter of Aug. 12, 1948, wherein you advise that the House of Delegates of the American Medical Association adopted the resolutions of the New Hampshire Medical Association concerning the payment of fees by the Selective Service System for examination of registrants.

"It is regretted that the House of Delegates of the American Medical Association should have taken such action. The backbone of the Selective Service System is its uncompensated personnel operating in the many communities of the nation. Representative citizens are asked to serve as members of local boards, members of appeal boards, government appeal agents, advisors to registrants, and medical advisors. These people operate as understanding neighbors and in the past have performed, without compensation, a work that is immeasurable. It is our desire to have local physicians participate in this work as medical advisors to the local boards. Of course, if the members of your association refuse to participate without fee, it will be necessary that the American Medical Association go to Congress to support an appropriation for fees, or else we will have to dispense with the services of those who refuse.

"Under the limited system now being organized with high physical standards by the armed forces, we do not expect to examine men at local board level except when a registrant claims to have an obvious defect or a manifest physical condition which would disqualify him for service. This, of course, will limit the amount of medical work necessary.

"I might add that it is not my opinion that the resolutions adopted by the American Medical Association represent the feeling of the doctors of this country. As we organize the new Selective Service System, many of our State Directors have long lists of doctors who have signified their desire and willingness to serve. It was gratifying to me that our representative at your meeting in Chicago reported that he recognized numerous lapel emblems which were issued to our former medical examiners by the Selective Service System. He identified himself to many of these doctors, and invariably he was told that they were ready and willing to serve again if the need arose."

Resolution on Policy of Federal Children's Bureau: This resolution directed the Board of Trustees to recommend that the policy of the Children's Bureau whereby only surgeons certified by the American Board of Orthopedic Surgery or eligible for such certification may be approved by a state agency for surgical service to children suffering from orthopedic conditions be liberalized so as to permit all qualified surgeons, whether or not certified by the American Board of Orthopedic Surgery, to be approved for such service. The following reply was received from Hon. Oscar R. Ewing, Federal Security Administrator, to whom the resolution was sent:

"I have discussed with staff of the Children's Bureau the resolution relating to desirable qualifications for surgeons participating in State crippled children's programs, adopted by the House of Delegates of the American Medical Association. It comes somewhat as a surprise to learn of this recommendation by the American Medical Association since we believed that the medical profession had always supported the efforts of the Children's Bureau and its advisory group of outstanding professional leaders over a long period of years, in the development of standards which would assure the highest quality of care for crippled children. It was our belief that the development of boards for approval of physicians who have demonstrated competence in special fields had been fully supported by the American Medical Association. The Children's Bureau advisory committees have on two occasions, 1936 and 1944, recommended that 'only surgeons who are certified by the American Board of Orthopedic Surgery, or are eligible for such certification should be approved by a state agency for surgical services for children suffering from orthopedic conditions.' In other words, they recommended that an orthopedic surgeon who had the training and experience required by such board, whether or not he is also a Fellow of the American College of Surgeons, be considered eligible for participation in the state crippled children's programs. There seem to be no other satisfactory criteria for determining competence in the special fields of medicine.

"The American College of Surgeons raised this same question with the Army, Navy, Veterans Administration, and the Children's Bureau, a year or so ago and was asked by all of the Government agencies to get together with the American Boards to avoid any duplication in approving specialists in surgery. The American College of Surgeons does not distinguish between general, plastic, orthopedic, neuro, and other specialties of surgery. Such distinctions seem essential for agencies employing surgeons or purchasing surgical care.

"Public agencies which have responsibility for administering a broad program of services for crippled children, have, in my mind, the duty to assure each child the highest quality of services available.

"It is not clear to me how such standards, as recommended by the advisory committee to the Children's Bureau, could constitute an arbitrary limitation on the right to practice medicine within the scope of state licenses and recognized professional qualifications, as indicated by the American Medical Association resolution.

"There is reference in the resolution to honoring of signatures on reports and prescriptions for prosthetic appliances. Crippled children are accepted by the state agencies for the provision of all services needed to restore the child to the maximum physical and mental health. When a child is found by the state agency to be in need of care because of a physical condition for which treatment can be made available under the program, the child is accepted for care and the state agency becomes responsible for the provision of medical services, hospital, convalescent home, or other institutional services, appliances and after-care as necessary for the treatment of the child. Appliances or other isolated parts of treatment are not purchased for a child by the state agency except as part of a comprehensive treatment plan for which the state agency is responsible.

"Officials of the Children's Bureau will be glad to join with you in studying any specific situations in which surgeons competent in orthopedic surgery are excluded from the crippled children's programs. In some states, of course, there are many more orthopedic surgeons than are required for providing the volume of service needed in the crippled children's programs."

Cooperative Medical Advertising Bureau

The Cooperative Medical Advertising Bureau continues to assist its present membership of 42 state medical associations through 34 state medical journals in securing advertising space sales and in servicing accounts by handling most of the details for the convenience of the journal offices.

Through its monthly bulletin, the Bureau offers helpful suggestions as well as current listings of products accepted by the Councils on Pharmacy and Chemistry, Physical Medicine and Foods and Nutrition. Acceptance of many products opens up an avenue of further prospects for the journals, all of which follow standards of advertising adopted for publications of the American Medical Association. It is, therefore, hoped to maintain present sales in subsequent years and even to increase them.

The net billing for the first nine months of the fiscal year, December 1947 through August 1948, amounts to \$427,817.26. Because of economic conditions, there were some curtailments in advertising appropriations, and therefore this figure lacks \$6,405.31 of the total amount for the same period of the previous year, or a decrease of less than 1.5 per cent. This is an average. Because of regional schedules, a few of the journals gained in revenue. Some enjoyed approximately the same revenue while the loss sustained by others exceed this percentage. The general trend of loss of other so-called "business papers" runs 6 per cent (in pages) for the period January through June 1948.

The trend for the remaining three months of this fiscal year indicates that the situation will not improve. However, the estimated total for the full year is \$570,532, and the average decrease will not exceed 2.5 per cent. The estimated total gain for 1946, 1947 and 1948 will approximate \$424,116, or an average gain of \$141,372 per year.

The total net billing for the past three years will approximate \$1,795,183.33, or an average of \$598,394.44 per year since the reorganization of the Bureau. Previous billing from 1913 through 1945 totaled \$4,909,356.23.

The Bureau, operating under the auspices of the Board of Trustees of the American Medical Association, functions in behalf of the state journal group, and all revenue is transmitted to the member journals, less the Bureau's operational costs which amount to about 6 per cent.

Office of Executive Assistant: Coordination and Public Relations

Substantial progress has been made in implementing the public relations program outlined in the report of the Office of the Executive Assistant which was submitted to the House of Delegates in June of this year.

The present report describes some of the newly launched activities that have won hearty approval from state and county medical societies and that have also received highly favorable comment from public relations journal and allied medical and health groups:

PR DOCTOR AND EXCHANGE

For a long time need existed for a specific medium through which public relations programs, ideas and achievements of state medical associations and the American Medical Association could be interchanged to the benefit of the entire medical profession. To fill this need, a periodical news letter and exchange, entitled the *PR Doctor*, was created. It is issued every two months at present, but expanding state medical association and county medical society programs may call for increased issuance.

The Secretary's Letter of Aug. 30, 1948, quoted some of the highly enthusiastic comments received from the profession after the first issue of the *PR Doctor* was mailed. Since that time there have been many additional commendations.

The *PR Doctor* is sent to the general officers of the Association, the members of the Board of Trustees, the members of the House of Delegates, the presidents, secretaries, journal editors, and public relations committee chairmen of state medical associations and a special list of leaders of key medical groups who have requested the news letter regularly. The headquarters

offices of state medical associations and of metropolitan county societies receive the *PR Doctor* news letter and, in addition, an accompanying kit of Exchange items described in the second half of the news letter. State associations in turn disseminate the PR information and ideas in this kit to their component county societies.

MEDICAL PUBLIC RELATIONS CONFERENCE

Reservations for the first National Medical Public Relations Conference, sponsored by the Office of the Executive Assistant, to be held in St. Louis on November 27, have exceeded original expectations. First invited were the chairmen of state medical association public relations committees, and executive secretaries and staff public relations directors of state associations. Since then the across-the-nation response has included reservations from presidents and other officers of state medical associations.

News about the Conference prompted such national organizations as the American Bar Association, American Dental Association, American Hospital Association, American Pharmaceutical Manufacturers Association and others to request special permission for their public relations leaders to attend. These requests have been granted.

Public Relations News, the outstanding weekly news letter of the profession, said, in commenting on the Conference, "Universality of PR techniques and their adaptability to all fields including the professions were never better illustrated than in the new program of the American Medical Association. The major project is preparation for the first Medical Public Relations Conference to be held in St. Louis November 27. Program will center around three basic topics: 'The Public Speaks on Health,' 'What Public Relations Did for Us,' and 'Yes, The Profession Needs Public Relations.'"

The theme of the Conference is "Shooting at Common Public Relations Targets." The need of such a definition and polarization of purposes was sharply emphasized by a survey of state medical association public relations objectives.

It is intended that the Conference become an annual event providing the public relations forum and personal get-together desired by public relations committee chairmen and staff of state medical associations.

PRESS RELATIONS

The gratifying response which the Press Relations Bureau has received from newspapers during 1948 indicates strongly that editors, reporters, feature writers, science writers and radio news commentators from every section of the country look to the headquarters office of the American Medical Association as a dependable source of information regarding medical matters. They have sought information and advice on every phase of the multiple activities of the Association and of the profession.

This Bureau, through its close contact with newspapers, magazines and radio stations, has succeeded in "killing" a great deal of inaccurate medical information. On many occasions inaccurate information regarding medical matters has been corrected in the process of publication, while in other cases such inaccurate information has been eliminated completely through the advice and services offered. Information favorable to the medical profession has often been added as a result of Press Relations activities.

Press Relations has worked closely with other Bureaus and Councils of the Association in matters pertaining to publicity, and its personnel has served as consultants on many occasions to medical groups seeking advice on publicity problems. For example, the officers and Council of the World Medical Association were assisted in handling publicity when 14 members of the Council, representing 12 different countries, held a four day meeting in New York, April 26-29, 1948. Much of the Council's business was carried in prominent stories in all of the New York newspapers and elsewhere.

Press Relations prepares and distributes the weekly news bulletin, *The American Medical Association News*, which contains official announcements of the Association and condensations of original articles and editorials appearing in *THE JOURNAL*, *Hygeia* and the special journals. This news release, containing material which may be reprinted or republished, is mailed to

1,300 newspapers, press association, magazines, radio stations, industrial house organs, medical journals and bulletins. Persons who receive this weekly news release have made specific voluntary requests for it.

The association's news releases have become a recognized medium for the dissemination of news pertaining to medical activities and medical progress. A casual perusal of a few magazines and newspapers indicates that there is a wide interest in articles on medical subjects.

The number of individual stories based on association news releases would run into the thousands. On the basis of clippings received in the headquarters offices, it might be said without exaggeration that American Medical Association stories have appeared in every daily and weekly newspaper in the United States during this year.

The association received splendid newspaper, news magazine and radio news coverage during the annual session held in Chicago in June. Sixty-three writers were registered for the session, including many of the nation's topflight science editors.

The Director of Press Relations has expanded his activities to include talks on "Fifty Years of Medical Progress," before a series of Kiwanis Club meetings in the Chicago area. His talks, which have been well received, outlined from a layman's point of view the many medical benefits which mankind has received during the last fifty years.

SECRETARY'S LETTER

The Secretary's Letter keeps officials of state and county medical societies informed about the activities of the American Medical Association and is mailed almost every week to more than 3,000 leaders in the medical profession. Its contribution to constituent state medical associations and component county medical societies is continually praised and commended. Many valuable inquiries and follow-ups are stimulated by its contents.

STAFF APPOINTMENT

The addition to the staff of Mr. William F. Doscher as assistant director of public relations has enabled the Office of the Executive Assistant to increase its services to the medical profession, has increased the amount of advice and guidance furnished to numerous state and county medical societies relative to setting up and operating medical public relations programs and has added to the number of special public relations events conducted by the Office.

FIELD SERVICE

Invitations to address and consult with state and metropolitan county medical societies on public relations matters are received from time to time during the year. Members of the staff participated in numerous conferences, discussions and meetings in 1948.

The Executive Assistant addressed medical society groups in Wisconsin, Minnesota, Nebraska, Washington and the New England states, and consulted with medical societies in California, Oregon, Oklahoma and Pennsylvania.

SPECIAL SERVICES TO COUNCILS, BUREAUS AND COMMITTEES

The services of the public relations office are available at all times to all Councils, Bureaus and Committees of the Association. Typical samples of events which were publicized and interpreted for the benefit of these groups and of the profession as a whole are:

1. *Spring Session of the Council on National Emergency Medical Service*.—A nationwide successful publicity campaign serviced 3,000 newspapers with a minimum of three different stories, teletyped and transmitted by Associated Press, United Press and International News Service; *Newsweek*, *Time* and the *Washington Report on the Medical Sciences* covered the session, and national broadcasts were made over the American Broadcasting Company's "Headline Edition" and the Mutual Broadcasting Company's "Mutual Newsreel."

2. *Civilian Amputee Program of Council on Industrial Health*.—The handless movie actor, Harold Russell, was invited to American Medical Association headquarters to pose for news and feature pictures to publicize the civilian amputee program of the Council. These, together with a story, appeared in the local press and were serviced nationally through Acme News-

pictures and the Newspaper Enterprise Association. Mr. Russell appeared on the American Medical Association television show, gave the Council's rehabilitation program a fine tribute and during his across-nation platform appearances will comment most favorably on the association's program.

3. Bureau of Medical Economics.—The public relations director of the National Safety Council was brought in, and his cooperation asked with reference to publicizing a new method of determining the leading causes of death. This new method, which was worked out by the Bureau, used the number of working years lost as a judging basis. Accidents were found to rank ahead of heart disease and cancer when this method was used.

4. Delegations.—Delegations from the World Medical Association and from Colombia were publicized through pictures taken by the American Medical Association public relations staff and supplied to newspapers.

MAGAZINE ARTICLES

The public relations department assisted directly and indirectly in helping create talked about articles favorable to the American Medical Association and to doctors in several nationally circulated magazines.

CORRESPONDENCE

The Public Relations office this year will answer nearly 3,000 letters dealing with medical public relations inquiries. This sizeable task involves requests from individual doctors, distinguished citizens, state and county medical societies, health agencies, the general public, students, business and industrial concerns and public relation organizations. The warm "thank you" letters received indicate that this service wins good will for the American Medical Association and the medical profession.

LIAISON WITH OPINION LEADERS

A continuing project has been started to cultivate and inform leaders in the various fields of public life, such as politics, education, government, law, the church, industry, labor, the press, radio, magazines, the armed forces, women's groups, motion pictures and the theatre.

The medical profession can never have too many friends among these varied American opinion leaders. For the most part, procedure is to meet and know these persons informally and to present the story of the achievement and public welfare goals of American medicine to them. Their stake in the continuance of a free medical profession is stressed; reception to date has been most encouraging and beneficial.

BUREAU OF INDUSTRIAL AND PERSONNEL RELATIONS

Since the presentation of the Bureau's last annual report to the House of Delegates in June 1948, the activities of the Bureau have expanded from the role indicated in the Functional Analysis of Personnel Program that was appended to that report.

In addition to previous duties, the Bureau has taken over the employment function. In accordance with employment requisitions furnished by Association departments needing personnel, the Bureau by various means, such as advertising and contacts with schools, residence halls and placement agencies, attempts to procure the personnel requested. Applicants for employment are screened by appropriate skill and aptitude tests and are referred to departments in accordance with requisitions on file. Obviously, the full benefits that are possible from the use of the tests in placement and utilization of the applicants can not be expected until such time as applicants substantially outnumber job openings. The tests so far, however, have screened out the incompetent, though the return of a more normal labor market must be awaited to exercise the selectivity that will be indicated by an adequate testing program.

To help ascertain the causes of labor turnover, the Bureau now conducts an exist interview with each employee leaving the Association's employ. An analysis of these interviews is expected to have practical as well as statistical advantages in planning future personnel policy. A report of labor turnover for the months of June, July and August 1948 shows that 159 applicants were interviewed, 65 tested and 118 hired. In the

same period, 130 employees were separated from the payroll. The latter total, however, can be discounted by the fact of 32 separations in the Varsity Department, the operations of which were cut radically when the work stoppage in the composing room ended June 27, and of at least 25 separations due to part time summer employees returning to school.

The aforementioned employment activities have been superimposed on the activities that were set out in some detail in the previous annual report. Those activities may be summarized as follows:

1. Continuance by job evaluation studies and performance rating to act in an advisory capacity as to equitable salary adjustments for "ordinary" office personnel.

2. Preparation of an employee's manual, which should be ready for release by December 1.

3. Preparation of an organization manual for the Association to indicate functions of departments and flow of work therein.

4. The formation, with the help of an advisory committee of certain Association executives, of a vacation policy in keeping with existing personnel practice of what are believed to be progressive organizations.

5. Participation actively in the installation and supervision of the varsity operation that was used in the publication of THE JOURNAL during the work stoppage in the composing room.

6. Negotiations with seven unions whose contracts either have expired or are about to expire.

7. Improving and installing modern personnel records to conform to Association needs in visible index form, including (a) modern application form for employment, (b) authorization to Comptroller to pay, (c) listing of applications of all employees in alphabetic sequence and by departments with collateral cards indicating salary history, job classification, performance rating and (d) a listing by job classifications.

8. Devising and preparing periodic reports, such as a monthly employment log, turnover report, application register, exit interview analysis, monthly wage and salary administration control report and a quarterly chartual presentation of salary grades, number of persons therein and job averages in light of area averages.

9. Studies in modern personnel administration.

10. Consultation with employees concerning personal problems affecting job performance.

11. Processing of employee grievances.

As has been stated in the previous annual reports submitted by this Bureau, the personnel program of the Association will be subject to future evolution and development as future appraisals and experience indicate the practical needs of the Association.

Council on Pharmacy and Chemistry

Since the last report was made to the House of Delegates at the Chicago Session in June, the Council on Pharmacy and Chemistry has continued to pursue its objectives relating to the advancement of research and therapeutic measures and any other activities for which this body has become renowned.

RESEARCH

A number of grants-in-aid have been issued under the auspices of the Committee on Therapeutic Research, a standing committee of the Council. These grants are intended to assist research workers in the study of various therapeutic problems. The Council was responsible for considerable research on the part of those interested in the development and distribution of new drugs and technics by examining the proposals, asking searching questions and demanding factual information. In addition, many conferences have been held in the Council office with individual research workers, with representatives of research organizations and with representatives of organizations interested in industrial efforts. Furthermore, information intended to acquaint interested parties with the latest information and to point research investigations toward research objec-

tives that provoke sound scientific facts was disseminated from the Council office in Council reports and by members of the headquarters staff to medical and allied groups.

THERAPEUTIC TRIALS COMMITTEE

The Therapeutic Trials Committee, another standing committee of the Council, has pursued its work of encouraging research in fields in need of exploration and of assisting collaboration to reduce to a minimum unnecessary repetition of research efforts and to bring together those who have new ideas or products and those who are qualified to undertake the necessary investigations. An outstanding example of the Committee's efforts is the collaborative project that it has initiated for the study of the effect of estrogens and endrogens on cancer. Participating in this project are fourteen pharmaceutical firms that have been donating drugs, forty-eight investigators and other interested organizations such as the American Registry of Pathology at the Army Institute of Pathology. A progress report of the Therapeutic Trials Committee has been prepared for presentation to the Council and will be published in *THE JOURNAL* in the near future.

PUBLICATIONS AND REPORTS

Council-sponsored publications, including "New and Non-official Remedies," "Useful Drugs," and the "Epitome of the Pharmacopeia of the United States and National Formulary," which have become standard reference books in medical and pharmaceutical schools, in hospitals and elsewhere continue to enjoy popularity, and thousands of these books have been distributed. Recently the "Annual Reprint of the Reports of the Council on Pharmacy and Chemistry" for 1947 was made available. In addition, there was released for distribution the "American Medical Association Interns' Manual," prepared by Councils and Bureaus of the American Medical Association and compiled and edited in the office of the Council on Pharmacy and Chemistry.

The Council also continues to pursue its policy of publishing various reports of interest concerning the prevention and treatment of disease and to make available reprints of these articles as requested by physicians and others with mutual interests.

"ACCEPTANCE" OF DRUGS

The acceptance program of the Council encourages the submission of many drugs, so that the manufacturers may use the Council seal. This represents one of the major activities of the Council and requires the maintenance of a well equipped laboratory at Association headquarters. Many outstanding authorities were consulted by the Council as the drugs were being considered. As the products were accepted, statements of actions, uses and dosage were prepared for publication in *THE JOURNAL* and eventual transferal to "New and Nonofficial Remedies."

MEETINGS

In addition to several committee and subcommittee meetings, the Council held its annual meeting on Nov. 12, 1948. The Therapeutic Trials Committee met on the preceding day. Details of these meetings will appear in an early issue of *THE JOURNAL* and will be abstracted in the 1949 annual report to the House of Delegates.

COLLABORATION

The Council and its office personnel continue to work closely with many agencies, governmental and nongovernmental. It has also worked closely with other departments at the headquarters offices where there were problems of mutual interest.

EXHIBITS

Exhibits prepared under the auspices of the Council have been popular and in demand by a number of societies and associations. Usually a representative of the Council office accompanies the exhibit to answer questions and to explain in detail the work of the Council and other Association offices.

FIELD SERVICE

Members of the headquarters staff continue to receive requests to appear before scientific and lay groups to discuss topics which fall within the purview of the Council. The Secretary and assistants at the Council office and members of the Council hold membership in a number of committees with varying interests, which permits active representation where indicated.

QUACKERY

The Council and the Bureau of Investigation have increased the tempo of their investigations of questionable practices, so that proper attention may be focused on frauds and charlatans and the chicanery which they promote. Articles on these activities have appeared from time to time and will continue to appear. In addition, where indicated, the facts are brought to the attention of the proper authorities.

TOXICOLOGIC PROBLEMS

Because of the harmful results that may follow the use of highly potent drugs and because of the accidents that have occurred with other preparations, the Council is expanding its interest in toxicologic problems so that proper warnings and other information will be available in time of need. An indication of this interest is seen in the joint enterprise undertaken by the Council on Pharmacy and Chemistry and the Council on Foods and Nutrition in the study of pesticides, a group of compounds which may present real hazards unless properly controlled.

LEGISLATION

The Council presents its information on therapeutics and allied measures and the benefit of its experience to those who are interested in health measures advocated by federal or state bodies. Such information usually is forthcoming on request from an interested individual or body, but often it stems from an action initiated at headquarters by another office, such as, for example, the Bureau of Legal Medicine and Legislation.

RECOMMENDATION FROM HOUSE OF DELEGATES

The report of the Reference Committee on reports of the Board of Trustees and Secretary, which was adopted by the House at the 1948 Annual Session, stated in part:

The reports of the councils and laboratories indicate, as they have in the past, the abundance and excellence of their diversified accomplishments. The committee recommends that some method of furnishing information on the work of the councils and laboratories to the rank and file of the membership be studied. Your committee believes that information about the accomplishments of these departments of the Association gains for the Association improved understanding and cooperation from the membership.

Steps have been taken to implement this recommendation.

Chemical Laboratory

Since the first of the year the Chemical Laboratory has been mainly occupied in carrying out its primary function of examining drugs and pharmaceuticals and establishing tests and standards for several of the products submitted to the Council on Pharmacy and Chemistry. Some of these products were promethestrol, methionine, methapyrilene hydrochloride, thonzylamine hydrochloride and methaphenilene hydrochloride. Certain of these demanded rather extensive investigation. The question of appropriate names for several new drugs has been considered in cooperation with the Council's Committee on Nomenclature.

Considerable time has been spent editing the tests and standards section of the forthcoming N. N. R., and the Director has been active in arrangements for the scientific meetings at the Chicago Session. One of the staff organized and presented a scientific exhibit for the Laboratory depicting the relationship of chemical structure and pharmacologic action at the annual session. The staff has been active in developing plans for the proposed expansion of the Laboratory.

The Laboratory has continued its function in the consideration of products or devices submitted to other departments when chemical examination or advice was thought desirable. An example was the examination for the Bureau of Investigation of the Zerret-Applicator, a quack device. It has advised the editorial and advertising departments in chemical matters and has aided the Library in indexing certain chemical products for the Quarterly Cumulative Index Medicus.

Several books have been reviewed for publication in *THE JOURNAL*, and numerous letters of inquiry have been answered. A system of classification is being set up for the books maintained in the chemical library used by the Division of Therapy and Research.

Council on Physical Medicine

The Council on Physical Medicine has continued actively its assigned duties of investigating apparatus, instruments and methods for therapy and diagnosis offered for sale to the medical profession. Thus, the Council aims to protect the physicians and the public against fraud, misrepresentation, inefficiency and objectionable advertising in connection with apparatus and physical methods recommended for medical purposes.

Since January 1948 approximately 118 pieces of apparatus have been submitted for consideration. Fifty-one reports of acceptance and three reports of nonacceptance were published in *THE JOURNAL* this year. Among the devices considered were whirlpool baths, diathermy, contraceptives, hearing aids, baby incubators, ultraviolet lamps, metabolism apparatus, oxygen tents, gynographs, electric impulse stimulators, inhalation pumps, radium applicators, colonic irrigators, pyrometers, sitz baths, electro-surgical units, germicidal lamps, resuscitators, audiometers, respirators, stethoscopes, appliances for relief of allergenic disturbances, infra-red lamps, vaporizers and elastic hose.

PUBLICATIONS

The booklet "Apparatus Accepted" is being revised, and it is expected that a new edition will be printed during the coming year. Six articles were published: Experimental Production of Cancer of the Skin by Ultraviolet Radiation, Tinted Lenses, Intermittent Positive Pressure Breathing, Microwave Radiations, Acceptance of Ultraviolet Lamps for Disinfecting Purposes (Present Status), and Resuscitation.

ATOMIC ENERGY

The Council has sponsored an exhibit on atomic energy at six medical meetings. It is scheduled for at least five additional meetings before the end of 1948. The two pamphlets "Glossary of Terms Used in Atomic Energy and Nuclear Physics" and "Primer of Questions and Answers Relating to Medical Applications of Atomic Energy" were printed this year and have been distributed widely since the Annual Session of the American Medical Association in June.

ARTIFICIAL RESPIRATION

The Council cooperated with the American National Red Cross in the publication of a joint article entitled "Resuscitation," which appeared in *THE JOURNAL*.

COUNCIL CONSULTANTS

Physical medicine embraces many branches of the healing art. In view of the wide scope, the Council is fortunate in having the expert advice of groups of consultants which have been appointed to advise the Council in specialized fields.

American Health Resorts.—A meeting was held in Chicago at the time of the Annual Session of the American Medical Association at which four members were present. A list of health resorts which are under medical direction are being compiled. Two papers are being prepared on the subject of health resorts. There will be a small exhibit on the subject at the Interim Session of the Association in St. Louis, November 30 to December 3.

Artificial Limbs.—A new group of consultants has been appointed. A meeting was held at the time of the Annual Session of the American Medical Association in Chicago in June. It was decided that the group would prepare two booklets, one for the surgeon and another, less expensive, for the patient.

Audiometers and Hearing Aids.—Thirty-two hearing aids were presented to the Council for consideration; two have been accepted and the remainder are still being investigated. Five audiometers have been submitted, but none of the reports on them is complete. The article "Rebates" has been adopted for publication.

Contraceptive Devices.—One meeting was held in Chicago in June at the time of the Annual Session. The revised "Requirements for Acceptance of Contraceptive Devices" have been adopted. Five devices were submitted for consideration, but the reports are not complete.

Education.—At a recent meeting of this group, the Committee on Education of the American Congress on Physical Medicine

requested closer cooperation with the Council through the consultants.

Electrocardiographs.—Six devices were submitted to the Council during the year. Two reports of acceptance were published in *THE JOURNAL*. One meeting was held in June, at which time revisions of the "Minimum Requirements for Acceptable Electrocardiographs" were discussed and made.

Electroencephalographs.—"Minimum Requirements for Acceptable Direct Reading Electroencephalographs" were adopted by the consultants and referred to the Council members for adoption. One meeting was held in Chicago in June. To date, no electroencephalographs have been submitted to the Council for consideration.

Ophthalmic Devices.—A new group of consultants has been appointed. A meeting is scheduled for October.

Respirators.—The Consultants have recommended to the Council the acceptance of two cuirass type respirators and recommended the rejection of one.

Röntgen Rays and Radium and the Medical Aspects of Atomic Energy.—This group had one meeting in Chicago in June. An article on "Radiation Hygiene" has been adopted by the consultants and by the Council for publication. The consultants have given careful consideration to radon ointments and radium applicators.

The year 1948 showed an increase in the work of the Council, apparently because of more interest in physical medicine by the profession and public. An extensive correspondence with manufacturers of equipment was necessary in an effort to clarify criticisms of the devices. Improvement in function, efficacy and reliability of apparatus in many instances was suggested by the Council.

The Council on Physical Medicine has continued its cooperation with governmental and private investigative agencies, as, for example, the Food and Drug Administration, Federal Trade Commission, Federal Communications Commission, National Bureau of Standards, national and city Better Business Bureaus, American Standards Association and the Underwriters' Laboratories.

Cordial cooperation has been maintained with the American National Red Cross, the Infantile Paralysis Foundation, the American Congress of Physical Medicine and the American Hearing Society.

Council on Foods and Nutrition

An important public health problem, created by the rapid introduction of a great number of new synthetic organic pesticides, was called to the attention of the profession in a statement adopted by the Council on Foods and Nutrition on June 26, 1948, and published in *THE JOURNAL* Aug. 28, 1948. These pesticides, developed for the most part since World War II, are now widely used in agriculture for the combating of insects and other pests. Their use creates potentially grave public health hazards, since toxic residues may find their way into foods. There is an appalling lack of factual data concerning the effect of these substances when ingested with food. The pathologic effects on man of the ingestion of small amounts of these substances over prolonged periods are entirely unknown. While recognizing the great potential usefulness of the pesticides in agriculture, the Council also recognizes the hazards of careless use.

The Council has had full support and help from the Council on Pharmacy and Chemistry in the study of this problem.

The recognition of the fact that foods and beverages are being increasingly exposed to possible contamination with the residues of chemical technologic aids used in their production may well be the beginning of a new era in the science of foods and nutrition as it concerns the physician. The profession has long recognized that foods must be free from bacterial contamination and that they must both contain and retain essential nutrients. The development of a multitude of new chemical technologic aids now makes it necessary to insist that foods be free from toxic residues.

To assist in keeping the profession informed of advances in the science of foods and nutrition as it relates to the health and

well-being of the people is the central purpose and reason for the Council's existence.

The "Handbook of Nutrition," a collection of selected papers by authorities in the field, is nearing completion.

The following data are illustrative of other recent activities of the Council.

Since cheese is an important article in the American diet and since it is recognized that cheese made from unpasteurized milk can and does account for certain epidemic diseases in man, the Council has indicated its intention to encourage the producers of cheese to take the necessary steps for the control of this source of infection.

Concerning the multiple vitamin fortification of the general milk supply, the Council endorsed the statement by the Food and Nutrition Board of the National Research Council (to be published). The Council issued a statement concerning the fortification of whole milk with vitamin A in which it was indicated that the Council could see no public health advantage to the supplementation of the normal vitamin A content of whole milk.

The Council has taken steps to encourage the production of fruit juices containing high natural levels of vitamin C. The fortification of fruit juices with ascorbic acid and thiamine has been proposed, but the Council has not accepted such juices.

One large group of manufacturers of ice cream has indicated its desire for Council support of a study of ways and means of improving the nutritive content of ice cream. The Council voted to encourage this project and plans to set up a committee for the consideration of the results of this investigation.

The status of the nitrogen trichloride treatment of flour ("agene" treatment) has been carefully followed.

The wider use of vitamin D through the extension of the use of vitamin D milk is in part due to the efforts of the Council. Currently the number of accepted brands of vitamin D milk exceeds 1,100.

The primary reason for the formation of the Council was to prevent or discourage false or misleading advertising claims in the promotion of foods. This is still one of the important functions of the Council. Annually, the Council reviews advertising copy worth several million dollars.

The services of the Council are given to many inquirers, among them physicians, laymen, manufacturers and governmental and private agencies.

The Council continues to have the cooperation of the food industry. For its cooperation and for the help of many interested groups, the Council is most appreciative.

Bureau of Investigation

For the period from Jan. 1, 1948 to Aug. 31, 1948, the Bureau of Investigation answered a total of 2,457 inquiries. This total was about evenly divided between members of the medical profession and other persons. The latter group included students and teachers, laymen, Better Business Bureaus, government agencies and newspapers and magazines.

The Bureau also contributed six columns of reports for inclusion in *THE JOURNAL* and collaborated with the Council on Pharmacy and Chemistry in a report exposing the promotion of a nostrum for bust development.

From the point of view of interest, the largest volume of correspondence was received because of the promotion of Dr. William F. Koch and his method of treatment for cancer by United States Senator William Langer of North Dakota. Senator Langer had caused a reprint from the Congressional Record for June 7, 1948, to be distributed, under his frank, to physicians throughout the country. A report covering one aspect of this promotion appeared in *THE JOURNAL* for Aug. 7, 1948.

The Director of the Bureau attended the trial in federal court at Fort Wayne, Ind., of the brothers Peter and Charles Kaadt of South Whitley, Ind., who had been dispensing vinegar and saltpeter and their own peculiar brand of hospitality instead of insulin and/or diet for diabetic patients. A report of this activity appeared in *THE JOURNAL* for May 22, 1948.

The Bureau is actively engaged in the gathering of information from the many sources available to it. It earnestly seeks

the cooperation of all members of the profession, as well as of the state and local medical societies, in the gathering of this information. It is intended to publish a greater volume of reports by the Bureau on subjects attaining national interest.

Council on Industrial Health

The regular activities of the Council on Industrial Health have continued along the lines discussed at some length in the last report under the general headings of public relations, professional organization, education and scientific development, preparation of standards and rehabilitation. Major developments since June 1948 have occurred in the fields of workmen's compensation, emergency medical service and plans for the next Industrial Health Congress.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The National Health Assembly held in Washington last spring contained no panel on industrial health. An effort was made to include it, although without enthusiasm. The Council now plans to conduct its next Annual Congress in a manner to make up for this omission. According to present plans essential problems will be stated and discussed in panels devoted to public relations, medical administration, environmental hygiene, medical-hospital services, health education and preventive medicine. These plans have met with approval by the other departments in the American Medical Association whose activities touch on employee health problems. The Division of Industrial Hygiene in the Public Health Service will act as a co-sponsor and other professional groups will be invited to participate. The House of Delegates has previously expressed its approval of joint planning for industrial health by management, labor and medicine. If the next Congress discovers useful ways of working together, a notable contribution to the advancement of industrial health and medicine will be made.

WORKMEN'S COMPENSATION

Several years ago the House of Delegates approved of participation by the Council on Industrial Health in a National Workmen's Compensation Conference under the aegis of the International Association of Industrial Accident Boards and Commissions. The International Association has withdrawn its support in favor of greater activity on the part of its own committee organization. The Committee on Workmen's Compensation of the Council has been so impressed by the useful contacts set up in this National Conference that steps have been taken to preserve them. Consultants are to be appointed representing the administrative, legal, insurance and technical aspects of workmen's compensation. The Directors of the Bureau of Legal Medicine and Legislation and the Bureau of Medical Economic Research have been invited to serve as members of the consulting committee. The work of the committee will embrace general surveys of medical relations in workmen's compensation, field visits to industrial commissions and insurance organizations, attendance at appropriate meetings, preparation of educational material, consultation services to state and other medical organizations, collection of data for special presentation to the profession and the necessary steps to improve treatment of compensable disability, disability evaluation and medical testimony. Dr. C. O. Sappington, whose experience and writings in industrial and compensation medicine are well known, has agreed to act as executive director of the Committee on Workmen's Compensation on a part time basis.

CIVIL DEFENSE AND INDUSTRY

Soon after the Council on National Emergency Medical Service was formed, its attention was called to the desirability of effective liaison with the Council on Industrial Health in order that conservation of industrial medical personnel through proper training, recruitment and distribution should occupy a prominent place in joint deliberations. The purpose of this liaison is to make available all permissible information dealing with preparedness and national security to the industrial medical and allied professions and to profit by past experience. In the event of atomic bombing industrial physicians and allied technicians represent a group accustomed to measure and control toxic

exposures. Industry will be the primary object of attack, and many changes will occur in the conduct of war plant operations and in the mobilization and use of the labor forces. There is need for intelligent preliminary planning to define the newer functions of industrial health as they relate to a national emergency, to integrate them with other measures designed for civil defense and to give industrial health a measure of authority in planning and administration in proportion to its responsibilities. These considerations have suggested that the Council on Industrial Health take the initiative in working out the details of industrial medical requirements under national emergency conditions.

The Council therefore has appointed a Committee to act as its consultants on the industrial medical aspects of civil defense. The membership is nearly identical to that of a committee serving in a similar advisory capacity to the Procurement and Assignment Service and the National Security Council during World War II. At its organization meeting the Committee determined that the principal problems had to do with the classification of the labor force according to physical capacity; the special health problems of women, the overaged and the handicapped; recruitment and training of industrial physicians, nurses and technicians; the training of industrial medical personnel regarding special missiles and new materials; the proper integration of industrial medicine with other elements in community civil defense planning, and the problem of nutrition in relation to fatigue and productive capacity. Subcommittees have these matters under consideration. A second meeting was held in Washington with representatives of the Armed Services, the National Security Resources Board, the Munitions Board, the Office of Civil Defense and the Brookings Institution. Material is in preparation which will alert the industrial medical profession with emergency and civil defense arrangements. Liaison is being organized with appropriate governmental agencies and with the engineering, chemical and nursing professions. The next meeting of the Consulting Committee will be held jointly with the Council on Industrial Health at Wright-Patterson Air Base in Dayton, Ohio, to permit inspection of and knowledge about the aviation and occupational medical services of the Air Force.

Council on National Emergency Medical Service Council Activities

During the interval since the last report of the Council on National Emergency Medical Service the concept of its obligations to the profession has been further crystallized. Specifically, an educational program to alert the profession at large to the magnitude of the international dilemma with the accompanying medical implications is essential. To this end an increased number of editorial items, comments and the like have appeared in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. It is believed that emphasis in this direction has increased the understanding on the part of physicians of the problems now at hand.

A number of conferences and meetings of the Council have been held. As a result the American Medical Association continues to be identified among those groups that are urging on the President of the United States and the various agencies of the government, including congressional committees, the pressing necessity for continued development of policies, procedures and programs concerning the coordination and study of the numerous problems of a medical, health and sanitary nature involved in mobilization of the nation's manpower, resources and materials in the broadest terms and at the highest level.

FULL TIME SECRETARY APPOINTED

Dr. Harold R. Hennessy has been appointed to the newly created office of full time Secretary of the Council. He was formerly a member of the staff of the Council on Industrial Health. Dr. Hennessy, who received his M.D. degree from the University of Minnesota Medical School, practiced in California prior to 1940. During World War II he held several assignments in this country and overseas, the last being in

the Office of the Surgeon, Fifteenth United States Army. At the present time he holds an Army Reserve Commission with the rank of colonel.

FOR THE YEAR AHEAD

The Council on National Emergency Medical Service, during the coming year, plans to utilize as fully as possible the numerous facilities of the American Medical Association to effect a timely, logical and orderly integration of the medical profession into the national security program.

Responsibility will be carried out through coordination in the constituent medical associations, with extension therefrom into the component medical societies. The Council, its consultants and the full time staff will be concerned with over-all policies and coordinations within and without the structural framework of the Association.

Thus, it is clear that for the year ahead the profession may anticipate aggressive national security medical programs implementing the principles as amended and adopted by the House of Delegates at the Chicago Session in June 1948.

The Council clearly recognizes that modern military activity depends basically on efficient and coordinated industrial production. It realizes that, if America is to keep her position of world leadership, every effort should and must be made to maintain the health and productive efficiency of her workers at a high level. Therefore, the medical personnel needs of industry, to insure the production of a sufficient number of planes, ships, tanks and guns are of prime interest to American medicine. In a similar way the personnel needs of agriculture and the civilian population at large must be weighed against the serious and pressing demands for physicians made by the armed forces. Planning and active coordinations along these lines are now in progress.

The effective number of available physicians in the United States is a valuable and relatively fixed human resource which cannot readily be increased. Therefore, this Council will continue to subscribe to the concept that strict economy in the use of professional personnel should and must be continued as one of the keystones in our nation's effort to secure the peace of the world.

The fine cooperation extended by individual physicians and concerned organizations has been most heartening, and the Council looks forward to the privilege of rendering increased constructive service to the profession, the armed forces, industry, agriculture and the public at large.

Bureau of Legal Medicine and Legislation

This report covers, in the main, only the period between the annual session of the House of Delegates held in Chicago in June and the date of its preparation, October 1.

REVISION OF STATE MEDICAL PRACTICE ACTS FOR AMERICAN MEDICAL DIRECTORY

In each edition of the "American Medical Directory" there are published the medical practice acts of the several states, which are kept up to date for the Directory by the Bureau. The last edition of the Directory was published in 1942. During the intervening period, there have been numerous amendments to state licensure laws and the Bureau has now completed a revision of these laws, as amended through the legislative year of 1948, for inclusion in the forthcoming Eighteenth Edition of the Directory.

THE EWING REPORT

On September 2, a report to the President by Oscar R. Ewing, Federal Security Administrator, was released, outlining a ten year national health program. It is understood that comments on the contents of this report will be submitted to the House of Delegates in some detail by other departments of the Association. The report suggests essentially the enactment of the compulsory medical care program under federal direction that has been proposed by the several editions of the Wagner-Murray-Dingell bill plus a gradual federalization, through subsidies, of medical education, of dental education, of nursing

education, of hospital maintenance and operation, of persons functioning in the field of public health, of research workers and of other personnel and facilities considered by Mr. Ewing to be necessary to make effective the program outlined in his report.

Copies of this report have been sent by the Bureau to each state medical association.

FOOD, DRUG AND COSMETIC LAWS

A recent important development should be reported briefly. There has been created in the American Bar Association's Section on Administrative Law a Committee on Food, Drug and Cosmetic Law. The creation of this committee followed the establishment in 1945 by the New York State Bar Association of a Section dealing with the same subject.

The American Bar Association committee, which held its first meeting in Seattle on September 6 of this year, will give continued study to both federal and state laws controlling the marketing of food, drugs and cosmetics and will from time to time suggest such amendatory legislation as the committee may deem to be needed.

The Chairman of the Committee, Charles Wesley Dunn, Esq., New York City, who occupies a similar position on the comparable Section of the New York State Bar Association, suggested in his first presentation to the Committee a number of amendments which will be given further study by the Committee.

The Director of the Bureau has accepted an invitation to become a charter member of the Committee.

NATIONAL MEDICOLEGAL ASSOCIATION

Reference was made in the report of the Bureau submitted to the House of Delegates last June to the fact that consideration was being given to the organization of a national association to promote a better development of legal medicine in the United States and to the publication of a periodical devoted to that subject. A meeting has been called of a steering committee to be held in New York City, October 18 and 19, where further consideration will be given to these proposals. The Chairman of the Association's Committee to Survey the Relationship of Medicine and Law, Dr. Alan R. Moritz, and the Director of the Bureau have accepted membership on the steering committee and will attend the New York meeting. The Director of the Bureau will also represent the American Bar Association at this meeting. Preparatory to the meeting, the Bureau has communicated with each state medical association to obtain reactions to the proposals and to date the response has been very gratifying and helpful.

SCOPE OF OSTEOPATHY

Court decisions by the supreme courts of three states have within recent months determined the scope within which osteopaths may legally function. A Pennsylvania case¹ involved the right of an osteopath to issue certificates of commitment to state institutions under the mental health act. The court held that an osteopath has no such right because he is not a "qualified physician" licensed to practice medicine in the state within the meaning of the mental health act. In a North Carolina case² the Supreme Court declared that osteopaths could not use drugs and that the phraseology used in the act under which they are licensed, authorizing them to practice "as taught by the various colleges of osteopathy recognized by the North Carolina Osteopathic Society" did not confer on them any right other than to practice osteopathy. The court said that the osteopathic colleges could not change the law of North Carolina nor widen the scope of the osteopath's certificate so as to permit him to practice other systems of healing by the simple expedient of varying their curricula. An Arizona case,³ decided in 1947 but recently abstracted in *THE JOURNAL*, involved the right of an osteopath to practice optometry. The Supreme Court of the State held that the osteopath was legally entitled to practice optometry.

1. *Palmer v. O'Hara, Secretary of Welfare, et al.*, 58 A (2d) 574; abstracted, J. A. M. A. 137:1553 (Aug. 21) 1948.

2. *State v. Baker*, 48 S.E. (2d) 61; an abstract will appear in an early issue of *THE JOURNAL*.

3. *Gates v. Kilcrease*, 188 P. (2d) 247; abstracted, J. A. M. A. 137:1079 (July 17) 1948.

In *THE JOURNAL* for April 10, 1948, there appeared an editorial referring to a then pending case in Kansas brought by a number of osteopaths before a three judge federal court against the governor and the attorney general seeking to restrain them from enforcing the section of the osteopathic act dealing with the scope of practice, as construed by the State Supreme Court, on the ground that that section, as construed, was discriminatory and violative of their rights under the Constitution of the United States. The decision of the Supreme Court of Kansas involved in this case held that a license to practice osteopathy authorized the practice of manipulative surgery and did not authorize the prescribing or administration of drugs as remedial aids. Testimony has been taken in this case, and briefs have been filed on behalf of both the plaintiffs and the defendants. The matter is now before the three judge federal court, and a decision is expected shortly. An appeal lies direct to the U. S. Supreme Court from the decision of the three judge court, whatever that decision may be.

STATE LEGISLATION

A summary survey of legislation of interest to physicians, enacted between July 1, 1947 and June 30, 1948, has been completed and will be published in a forthcoming issue of *THE JOURNAL*. It would unduly prolong this report if an extended reference were made to the state laws summarized in this survey, but it may be of interest to refer to some of the more important laws enacted.

A law was enacted in Virginia requiring a permit from the State Corporation Commission before any agency may solicit funds in the state for medical care programs. To assist the Commission in reviewing applications for permits, an advisory board has been created composed of seven members, one of whom is a representative of the Medical Society of Virginia. This law stems from a resolution adopted by the legislature in 1946 creating a commission to make a study of the activities of private groups seeking funds from the public for various phases of medical care. The State Division of Statutory Research and Drafting was assigned the responsibility of collecting for the Commission basic information and that Commission sought the assistance of the Bureau.

A law was enacted in Kentucky providing from the certification as "certified psychologists" of persons qualifying before a board of examiners in psychology. Similar laws had previously been enacted in Connecticut and in Virginia.

Laws providing for the licensure of practical nurses were enacted in Louisiana, New York and Rhode Island. Nursing scholarships were created in Mississippi and Virginia.

A law was enacted in South Carolina placing on a prescription basis the sale of the sulfonamide drugs, aminopyrine, thyroid and any other drugs declared to be "dangerous drugs." A similar law was enacted in Massachusetts with respect to amphetamine, barbituric acid and any other drug deemed by the department of public health to be a "harmful drug."

Laws providing for the licensure of hospitals were enacted in Massachusetts, Mississippi and Wyoming. Enabling acts under which prepayment medical service plans may be organized were passed in Mississippi and in South Carolina.

In Massachusetts, a special commission was created to consider the advisability of licensing institutions engaging in animal experimentation and to consider the advisability of supplying such institutions with unclaimed animals held in public pounds.

A New York law provides for the establishment of a state university and the creation of two health and medical centers as a part of it. Another New York law authorizes state aid to medical schools, research centers and similar institutions carrying on special training or research programs pursuant to contracts with the state university.

In South Carolina, eight scholarships were established at the state medical college, valued at \$75 a month plus tuition, and conditioned on the recipient's promising to engage in private practice for one calendar year for each year of the scholarship in some rural community in the state designated by the state board of health.

Arizona and Louisiana enacted hospital survey and construction acts and New Jersey created a commission to survey the state's voluntary charitable hospitals. In South Carolina, a law was enacted directing the state board of naturopathic examiners to undertake an immediate study of the licenses previously issued by that board.

In Virginia a senate joint resolution was enacted creating a commission to study medical education in general. In the words of the joint resolution, "the commission shall consider the costs and needs of medical education and the relationship of medical education to the services that it renders and the needs of the people, particularly in rural areas." The commission is to report to the legislature not later than Sept. 1, 1949.

AN EXAMPLE OF COOPERATION

The Executive Secretary of the Medical Society of the State of North Carolina, Mr. James T. Barnes, on his own initiative recently had sent to the Bureau a complete set of briefs filed in cases pending before the Supreme Court of that state involving the question of fees allowable to physicians who treat workmen's compensation cases. It has been previously reported that the Bureau maintains a Brief Library pertaining to numerous medicolegal issues. The more comprehensive this Library becomes, the better the Bureau will be able to serve. Other state medical associations are urged to keep the Bureau in mind if important court decisions arise in their states involving medicolegal issues.

INCOME TAX DISCRIMINATIONS AGAINST THE PROFESSIONS

Reference was made in the report of the Bureau submitted last June to several tax proposals then being made to remove some of the inequities in the federal income tax laws as they relate to professional persons.

These proposals in effect would permit individual proprietors and partners to provide from earned income for their retirement, the sums expended being excluded from taxation during the year expended but taxable during the period when the benefits of the retirement plan are received. Stated differently, the incidence of the tax on this income would be shifted from the year of earning to what is in most cases the year of spending. The House of Delegates instructed the Bureau to keep in close touch with this development. This it has done.

These proposals were considered by two sections of the American Bar Association at its 1948 meeting in Seattle, the Section on Corporation, Banking and Mercantile law and the Section on Taxes. The two sections failed to agree on a mutually satisfactory proposal to attain the objective and consequently the matter was not given consideration by the House of Delegates of the American Bar Association. It is anticipated that additional consideration will be given this matter at the midwinter meeting of the House of Delegates of that association.

In the meantime two programs have been scheduled in Chicago to discuss these tax proposals, one by the Committee on Federal Taxation of the Chicago Bar Association to be held on October 27 and the other by joint committees of the Chicago Medical Society, the Institute of Medicine of Chicago and the Chicago Bar Association on November 16. The director of the Bureau of Medical Economic Research, Dr. Frank G. Dickinson, will participate in the latter program.

The Bureau has secured material explanatory of these proposals for distribution to state medical associations so that the principles embodied may be studied prior to the convening of the Eighty-First Congress.

It is not recommended that the House of Delegates take any further action in connection with this matter at the present time.

IN BRIEF

A member of the staff of the Bureau, Mr. George E. Hall, has recently accepted membership on the Executive Committee of the Committee on Tests for Intoxication of the National Safety Council. During the summer, Bureau memoranda have been prepared or revised dealing with Blood Grouping Tests in Disputed Paternity Cases, Injunction and Quo Warranto to Restrain the Unlawful Practice of Medicine, Scope of Oste-

opathy, and Malpractice Actions for Death or Injury Following Administration of Anesthetics. A memorandum nears completion which will contain reference to the laws that have been enacted restricting the use of the title "Doctor" by requiring that in connection with its use there appear some descriptive phraseology indicating the type of practice the licensee is authorized to pursue. Arrangements are under way for a program on the relationship of physicians to the law to be presented at the Atlantic City session in 1949. . . . A reference is made in the report of the Secretary of the Association to a study under way by the Bureau concerning the corporate practice of medicine. This study is under the immediate supervision of Mr. Edwin J. Holman, a member of the Bureau staff. . . . The Director of the Bureau has been designated as a consultant to the Committee on Workmen's Compensation of the Council on Industrial Health. A communication has been received from the Professor of Medical Jurisprudence at Osmania University, who is also doing medicolegal work as coroner of the Hyderabad State, India, requesting information as to the sources in the United States from which he may obtain information concerning the application of science to criminal investigation. This information was furnished to the physician by the Bureau. A very important investigation has been concluded in New York concerning the scientific basis for the chiropractic concept of the causes of disease and the chiropractic technic used to effect a cure. This study was made by a commission appointed by the Subcommittee on Cults of the Council Committee on Legislation, Medical Society of the State of New York, and the commission was composed of the Professor of Anatomy, Syracuse University College of Medicine, the Pathologist at White Plains Hospital, White Plains, New York and the Professor of Biophysics, Cornell University.

Bureau of Health Education

In order to conform with the change in Association policy whereby reports are now presented to the Interim Session of the House of Delegates rather than the Annual Session, this report on the work of the Bureau of Health Education covers the period from Jan. 1 through Aug. 31, 1948.

One new position has been created in the Bureau in the hope of coordinating speaking trips by American Medical Association representatives from all departments, so that the Association would receive the greatest possible value from all traveling staff members. The original optimism about arranging numerous other speaking engagements in connection with trips already projected has not been found justified. For the most part, the schedules of traveling speakers from other departments are well filled, and it is seldom that it is possible to add any engagements to itineraries. However, 67 extra engagements which would not otherwise have been made have been arranged, accepted and filled.

QUESTIONS AND ANSWERS

Individual letters received and answered in the department concerned with medical inquiries from laymen totaled 6,551. The exact total of questions is considerably larger, since many letters contained as many as 4 or 5 questions. The total represents an appreciable increase over figures for the corresponding period in 1947, during which 5,788 replies were prepared. On a calendar year basis, the difference probably would be still greater, since the decided decrease in inquiries during the summer months weighs heavily in the present report.

The subject of medical practice stimulated the greatest number of individual questions, the total being 364. Breakdown of this showed 87 questions regarding the American Medical Association and its services, 71 queries about how to select a physician, 44 on medical history and 102 questions of a general nature. Replies to inquiries about selecting a physician included routine referral to the local medical society for more exact information.

Next on the list were inquiries regarding drugs, 311. The popularity of the newly developed antibiotics is reflected in the fact that there were 102 questions about penicillin and strepto-

mycin. Only 19 queries were received on the subject of sulfonamide drugs. There were 136 inquiries of a general nature.

Health education was third in the list, with 236 questions. Thirty-three of these related to health education in primary schools and 23 in high schools. There were 37 inquiries about how to become a medical student. Of the total, 108 questions were of a general nature.

Following in order were questions on eyes, 154, child care and training, 128, cancer, 117, and allergy and asthma, 105.

This department also replied to 128 inquiries referred from the Cleveland Health Museum, 129 from the Tennessee State Medical Association and 131 queries from various museum sources, such as the Dallas and Newark Health Museums.

BUREAU PUBLICATIONS

The Bureau reviewed 25 books for *THE JOURNAL* and 14 for *HYGEIA*, and prepared 19 other contributions to *THE JOURNAL*, such as editorials, radio announcements, articles and news items. It also prepared 70 contributions for *HYGEIA*, including manuscripts, questions and answers, items for "Mothers' Column," and "Teachers' Helps."

The Bureau originated 21 articles published in periodicals other than those of the American Medical Association, and furnished advice and consultation on manuscripts to 5 organizations.

Fifteen new pamphlets were added between Jan. 1 and Aug. 31, 1948, to the Bureau's list of publications, 6 were revised in text and 20 were discontinued. Distribution of Bureau publications through the order department during this same period was 229,254; 67,900 reprints were sold direct to quantity purchasers, making a total of 297,154.

The practice of evaluating a pamphlet when it is nearly out of stock, then either discontinuing it and replacing it with fresh material on the subject or revising and reordering it, is leading steadily to a completely up-to-date file. But since expense must be considered, the evolution must of necessity be a gradual process.

Perhaps the most gratifying surprise in this period was the success of the 1948 American Medical Association lay publications catalog, designed and processed this year, for the first time, by the Bureau of Health Education. Within the last seven months since its publication, over 28,000 copies have been distributed and, judging from the trend, at least 40,000 will have been sent out before the end of the year. This distribution is in contrast to that of the last catalog, published in 1946, which had a total distribution of 29,830 copies over a period of two years. The 1949 catalog is also being prepared and processed by this Bureau.

RADIO

The year 1948 marked a recession from the preceding year of exceptional activity.

Network Programs.—Although authorized for sale to suitable sponsors, the network programs remained unsponsored. The restrictions placed on sponsorship by Association policy are such that it is not easy to find a sponsor meeting the requirements who has sufficient financial resources to undertake a broadcasting venture of the magnitude involved in commercial network radio and whose business is sufficiently related to medicine to make an American Medical Association program a profitable venture. Efforts to sell the programs are continuing through the Marshall-Hester Productions, New York, and the Network Sales Division of the National Broadcasting Company, Chicago.

The 1948 NBC series was entitled "Doctors Today."

Great changes in approach and technic have been developing in radio, with a strong tendency toward the so-called documentary approach whereby the actual voices of persons who are doing certain work or having certain experiences are brought to the microphone, telling their story in their own words, often on tape recordings. Many such programs are on the air. All the networks except NBC now permit recorded voices for the documentary features of their programs. Every effort is being exerted to bring about a change in NBC policy, whereby the Association can use recordings on its broadcasts

over this network. Recordings are permitted on commercial news programs, but the same privilege is denied to broadcasters of educational programs. A number of conferences with radio critics at Columbus led to the conclusion that changes would have to be made in American Medical Association radio technics in order not to be left behind in the march of progress.

The Bureau of Health Education was the pioneer in popularizing the dramatization of radio health programs. Now the dramatic technic has been taken up in many quarters. The medical societies in Michigan, Wisconsin, Colorado, Jackson County, Mo., and others are making their own local transcriptions, many of which surpass in quality those made by the Bureau of Health Education.

On the other hand, an evaluation of the network program by the Schwerin Research Corporation through listening audiences is highly favorable. This report shows that 88 per cent of listeners responded favorably, 6 per cent unfavorably and 6 per cent indifferently. Few programs receive higher than 75 per cent favorable response, which makes the percentage of 88 very high, particularly in view of the basically educational character and purpose of the program. Curiously enough, the high point of interest was not in the dramatic episodes but at the times when physicians were giving straightforward information.

The format of the 1949 programs for which planning was begun in 1948 is being changed in order to keep pace with trends in the radio field.

Transcriptions: Seven electrical transcription series were made or remade during the year.

Transcription series now available are: three dramatizations, five musical programs and six interviews.

A special program using the Bureau's electrical transcriptions was carried out by the Tennessee State Medical Association.

Special Broadcasts: The special broadcasts included two sessions of the American Medical Association, the Interim Session at Cleveland in January and the Annual Session at Chicago in June.

A new technic was introduced in these broadcasts, and, instead of talks and interviews prepared in advance, a great deal of material was picked up in the Scientific Exhibit and at the meetings of the House of Delegates for use in network broadcasts and transcriptions. This was done with tape recorder.

Six radio programs were broadcast by staff members in local areas where they attended meetings.

TELEVISION

Through the continued helpful cooperation of television Station WBKB, the Bureau of Health Education presented 38 programs during the period from January 1 to August 31. That these presentations, introduced each week as "American Medical Association" programs, are reaching a considerable segment of the general population in Chicago and nearby sections is indicated by the fact that there are now 30,000 television receiving sets in the area. The station program, carried in Chicago newspapers, also lists the American Medical Association as a participant. Extreme care is exercised to present topics that will have adequate attraction for the general public; at the same time the material is kept on a high ethical level. On many occasions, representatives of various Councils or Bureaus at Association headquarters have cooperated in presentation of special features. Among these have been the Therapeutic Trials Committee of the Council on Pharmacy and Chemistry, the Council on Physical Medicine, the Council on Industrial Health, Bureau of Medical Economic Research, and Committee on Medical Motion Pictures.

Much helpful assistance has been provided by the Bureau of Exhibits in suggesting subjects for presentation and providing photographs, charts, equipment and models for demonstrations. Special programs presented during the period included an interview of Dr. Archer C. Sudan, first physician to receive the American Medical Association General Practitioner Award, an interview of Dr. Isaac Abt, on the occasion of his being awarded the Distinguished Service Medal of the Association, and five programs drawn from the scientific sections at the Chicago Session.

Helpful relationships have been established with numerous health agencies, including the Chicago Health Department, the Cook County Health Department, the local branch of the American Cancer Society, local offices of the National Tuberculosis Association and the public relations department of the Illinois State Medical Association. There is being developed a plan to present several programs dealing with projects sponsored by the Woman's Auxiliary of the Chicago Medical Society.

Although many technical details still remain to be mastered, it is apparent that television offers a valuable contact with the general public in the field of health education, and also is a means of promoting understanding of and sympathy with the aims of the American Medical Association.

"Newscasts" have been based on reports in *THE JOURNAL* or articles in *HYGEIA*.

There has been a steady, though not large, demand for the "Television Handbook," issued by the Bureau in 1947.

LOAN COLLECTIONS

Fifty-one loan collections of *HYGEIA* articles representing 24 different titles were sent out by the Bureau. Collections most in demand were those dealing with outstanding medical advances, cancer, heart disease and first aid. This selectivity followed closely the preferences of borrowers in the preceding year.

A greater total of physician requests than that for the entire year in 1947 was received, which gives added emphasis to the apparent fact that local civic organizations are turning more and more to physicians for discussions of health subjects before lay audiences.

HEALTH AND FITNESS

The two consultants in the Division of Health and Fitness accepted 79 invitations to address groups or take part in conferences or workshops in 23 states during the past eight months. Eight trips were made to consult with school or college authorities in regard to the development and expansion of health programs in such institutions.

The work of the consultants is being more and more concentrated in the field of school health service and school health education. The Conference on the Cooperation of the Physician in the School Health and Physical Education Program, October 1947, apparently stimulated considerable interest in the field of school health on the part of state medical associations and state health and education departments. As a consequence, school health problems were given consideration in a number of state medical association meetings this past year.

The publication of the report of the October 1947 Conference, "Physician and Schools," and the pamphlet "Health Appraisal of School Children," edited by the consultants, Dr. D. F. Smiley and Dr. Fred V. Hein, and published for the Joint Committee on Health Problems in Education, has met with an enthusiastic reception. These two brochures have been widely distributed in every state to physicians, school administrators, teachers and public health workers. Along with the pamphlet, "Suggested School Health Policies," these two publications make a fairly complete summary of principles for school health service which is apparently filling a very real need. Copies of each were also sent to the professors of preventive medicine in all the medical schools and to all the schools of public health.

The consultants have particularly worked with the states of Tennessee, Wisconsin, New Jersey, Arkansas and Illinois in improving their school health programs. Particular mention should be made of the Woman's Auxiliary of the Medical Society of New Jersey, which has furnished the leadership in organizing health councils in all the counties of the state and laying before those councils, the project of a four point school health program recommended by the State Department of Education and the State Department of Health.

The consultants have given assistance to the Joint Committee on Health Problems in Education in developing policies with regard to height-weight records for children, formulas for the allocation of tax moneys to schools, interscholastic boxing, administration of school health service programs, fluorescent lighting in schools and the use of germicidal lamps in schools.

Plans are being made for a second Conference on the Physician's Relationship to the School. It is planned that this conference will again be held at Highland Park, Ill., in the fall of 1949. It is expected that the meetings will be devoted to consideration of the private practitioner's relationship to the school health program, the part time school physician, the full time school physician and the part time public health physician in the school program.

The consultants are continuing to prepare a series of "Suggested Discussion Topics for Teacher Aids" to accompany each issue of *HYGEIA*. These materials continue to be widely utilized in connection with the use of *HYGEIA*, *The Health Magazine*, as a resource aid for health education in secondary schools. The consultants are called on to review a considerable number of films and other audiovisual aids for use in school health and physical education instruction.

The Association's Committee on Health and Physical Fitness, of which the consultants of this Division are members, held a meeting in conjunction with the annual session of the Association in Chicago.

The exhibit, "Examining the School Child," at the 1948 Annual Session of the Association attracted more attention among attending physicians than did the exhibit of the year before.

The Division lost the valued services of Dr. Jean F. Smiley on Sept. 1, 1948. Dr. Smiley has accepted an important post with the Association of American Medical Colleges.

MEETINGS AND CONFERENCES

The Bureau staff traveled 97,666 miles to attend meetings or addressed 130 audiences in 27 states. They participated in 71 conferences and committee meetings. It was necessary to decline 21 engagements because of previous commitments or travel difficulties.

COOPERATIVE RELATIONSHIPS

Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.—The 1948 meeting of the Joint Committee was held March 22 to 24 in the offices of the National Education Association, Washington, D. C. The Committee reelected Dr. Bernice Moss, Chairman, Dr. George Lyon, Vice Chairman and Dr. D. F. Smiley, Secretary, for another one year term.

Among the principal items dealt with by the Committee were: adoption of a resolution recommending in substance that state and local governmental units allocate funds on a basis which will not penalize school districts for absence of children due to illness; adoption of a resolution recommending in substance that schools should not sponsor or conduct interscholastic boxing contests because of the extreme health hazards involved; adoption of a resolution stating in general that where there is mutual understanding and cooperation between departments of education and health, with the resultant pooling of the resources of both departments, good school health service programs have been developed under school administration, health department responsibility or through joint jurisdiction and that in the light of this experience there is no single pattern that can be recommended at the present time for all situations at either the state or local level; agreement that on the basis of present research the old standard of refraining from swimming for one hour after a heavy meal, particularly on the part of unskilled persons, should still be observed, and adoption of a resolution urging that licensed medical schools, research institutions, hospitals and laboratories be supported in their animal experimentation programs in view of the great progress which has resulted and is continuing to be made in the fight against disease through animal experimentation.

U. S. Children's Bureau Advisory Committee on Maternal and Child Health Service: The Director of the Bureau was reappointed to membership on the Advisory Committee together with Dr. James R. Miller, Trustee of the Association.

American Public Health Association Committee on Professional Education.—This is one of the most important committees on which the Director of the Bureau is a member, since it is working toward objectives fully endorsed by the

medical profession, namely, improvement of the public health by improving the qualifications and training of public health personnel. The committee meets about twice a year, including one meeting at the time of the A.P.H.A. annual convention. This committee has prepared reports on the qualifications of health officers, bureau chiefs, sanitarians and health educators and is working on other reports. It supervises the accreditation of schools of public health for giving the master's and doctor's degree in public health and directs the activities of the A.P.H.A. Merit System Unit and Placement Bureau. The Director has served two terms, the last of which expired early in 1948. Association policy ordinarily calls for retirement after two successive terms, but this policy was waived and the Director has been reappointed for a term expiring in 1950. A meeting was held in New York, March 22, 1948.

A. P. H. A. Sub-Committee on Accident Prevention.—This sub-committee is allocated to the Committee on Administrative Practice and is under the chairmanship of Dr. Donald Armstrong. The committee has furthered accident studies and considered publication of materials in the field of accident prevention.

A. P. H. A. Sub-Committee (Illinois) for Estimate of Needed Health Educators.—The Associate Director of the Bureau serves on this sub-committee on planning for health education.

A. P. H. A. Section on Health Education.—The Director was appointed to the Nominating Committee for this section.

American Cancer Society Educational Committee.—This committee meets every month, usually in New York, and usually starts its meeting at 4:30 p. m. and continues it into the evening. For this reason it becomes necessary to spend two full days in New York at times when the use of planes is impossible. The Director has therefore been unable to attend many of these meetings. This committee is concerned primarily with professional education and has shown very little interest in lay health education, except for money-raising campaigns for the Cancer Society.

The Director of the Bureau also serves on the following committees:

- Committee on Education and Public Information for the Home Safety Conference, National Safety Council
- Executive Committee, National Society for Medical Research
- National Committee for Traffic Safety
- Advisory Board on Health Services, American National Red Cross
- American Medical Association Committee to Confer with National Safety Council
- American Medical Association Advertising Committee
- The President's Highway Safety Conference, Committee on Organized Public Support
- Special Consultant in Health Education, American Medical Association
- Woman's Auxiliary
- Prentiss Award Committee
- Committee on Public Education, U. S. Office of Civil Defense
- Consultant in Radiological Defense, U. S. Office of Civil Defense

United States Government Agencies.—The Bureau continues to cooperate, largely by correspondence, with government agencies. Materials or information have been furnished during 1948 to numerous departments of the Federal Security Agency and to the Department of Agriculture, the Department of the Interior, the Department of State, the Army, the Navy, the Veterans' Administration, the Institute of Inter-American Affairs and the Office of the Secretary of Defense.

MISCELLANEOUS

The Bureau continued to compile information about attacks on and defense of medical research and to distribute it in response to requests.

The Bureau furnishes questions and answers to HYGEIA for publication and checks all galley and page proofs for medical accuracy.

The Bureau continues its cooperation with the Woman's Auxiliary.

As usual, the Bureau has enjoyed the cooperation of physicians outside the headquarters offices. Special thanks are due those who cooperated in radio, television and transcription programs and the consultants who have furnished answers to questions and have helped with advice and consultation. The Bureau appreciates the cooperation of other departments in the Association.

Bureau of Medical Economic Research

This report covers the activities of the Bureau of Medical Economic Research for the period from Jan. 1, 1948 to Oct. 1, 1948. During these nine months the Bureau has published five items:

"The Selling Price of a Medical Practice," which appeared in THE JOURNAL Jan. 31, 1948, was prepared because of numerous inquiries about the procedure to be followed when a retiring physician wished to dispose of his practice. The executive secretaries of a number of state medical associations gave valuable suggestions.

"Comparative Increases in the Cost of Medical Care and the Cost of Living" was hurriedly prepared for the use of the American Medical Association representatives attending the National Health Assembly in Washington on May 4, 1948.

"An Annotated Bibliography on Group Practice, 1927-1947" is a summary of the literature on group practice and has been very well received. This bulletin is the first published item in the Bureau's continuing study of group practice.

"What is the Leading Cause of Death?" was published in THE JOURNAL for Oct. 16, 1948. This is a statistical and actuarial study which shows that accidental deaths cut off more years from the working lifetimes of the American people in 1945 than any one natural cause of death. This bulletin is an eloquent testimonial, albeit statistical, of both specific medical progress (control of pneumonia and tuberculosis) and general medical progress (sharply lower mortality among young persons).

It is believed that this study will reorient public thinking on the nation's health problems.

"How Rich Are You?" is a small pamphlet in which an indirect method is employed to refute the notion that the citizen "can get something for nothing." This widely held notion is the root cause of much of the support for socialized medicine. This bulletin is of interest to physicians' wives or to anyone who keeps household accounts for a family.

"The Cost and Quantity of Medical Care in the United States" is the most exhaustive study the Bureau has published since it was reorganized in the fall of 1946. It covers three aspects of medical economics—cost, price and quantity of medical care. On the cost side, attention is called to the increase in the dollars which the American people spend for medical care and the fact that these dollars are a decreasing percentage of total consumer expenditures for all goods and services. It is particularly noteworthy that the percentage of total consumer expenditures for physicians' services has been declining more rapidly than have the percentages for the other items in medical care. In fact, the physician in 1929 received 32 cents out of the average dollar spent by the consumer for medical care; in 1935-1939 the physician's share had dropped to 31 cents, and in 1947 it was slightly more than 25 cents. Thus it is clear that the physician's share is on the decline. On the other hand, the hospital share has risen from 13 cents in 1929 to 21 cents in 1947. The second aspect covered is prices (or fees). In the last ten years unit prices of goods and services purchased by consumers—the cost of living—have risen 59 per cent, whereas unit prices—fees, hospital room rates—in the medical care field have risen only 32 per cent. Again we say that medical care prices have behaved much better from the point of view of the consumer than have prices generally. The third aspect covered in this bulletin is quantity of medical care. This is practically the first treatment of the subject of quantity of medical care in the literature of medical economics. Although the data have severe limitations, the conclusion is that the quantity of medical care received by the American people has been increasing rapidly in the past decade and far more rapidly than the number of physicians. This conclusion is particularly important in the light of various claims that there is a great shortage of physicians in the United States.

The steady demand for the bulletins published in 1947 and 1948 has required the Bureau to reprint some of them. The Bureau has made available to the state medical associations for public relations purposes slides of the charts used in the article, "Is Medical Care Expensive?" and has offered to do the same with respect to "The Cost and Quantity of Medical Care in the United States." The last paragraph of this bulletin includes the following statement: "The quest for better health, improved

medical care and longer life is a never-ending quest. It will continue as long as pain comes too often and death too soon. Members of the medical care team have an unlimited opportunity to improve medical care and at the same time are exposed to the hazard of attaining one goal only to find that the goal has been moved up. The demand for improved medical care is well-nigh insatiable, and those who try to provide it are subject to easy criticism."

The response to the bulletin on "The Cost and Quantity of Medical Care" and its companion bulletins has convinced the Director of the Bureau that some of the attacks on the American medical profession are due to lack of understanding of the unique function of the physician in our society. Medical care can and will improve but it can never be adequate. The number of deaths is not as important as the average number of years the decedents had lived.

In addition to these Bureau bulletins, more than a score of major articles and book reviews have been published in *THE JOURNAL*. This increase in the number of items published measures the growing maturity of the research staff of the Bureau. Some of the longer reviews of important books have been mimeographed and sent to the members of the House of Delegates. The Director has read several manuscripts dealing with statistical data and methodology for the Editorial Department.

IBM

The IBM section of the Bureau of Medical Economic Research has performed work [at cost] for a number of agencies. It has assisted the Council on Medical Education and Hospitals in making a considerable number of the tabulations for the hospital and licensure numbers of *THE JOURNAL*. An analysis of differences in clauses in policy forms was made at cost for Associated Medical Care Plans. Special tabulations of all the physicians in the state of Illinois were made at cost for the Illinois Department of Health. The addresses of approximately 9,000 physicians in the age group 19-25 were listed for the Office of Selective Service Records. Analyses of two questionnaires on advertising matters were made for the Advertising Department.

The principal IBM operation during the past nine months has been the development of the three card file. There will be three basic cards for each of the 220,000 physicians in the United States, Canada and the United States possessions. In a few weeks the Directory Department will provide galley proofs of the new American Medical Directory, and additional information from these galley proofs will be punched into the cards. The Bureau punch card file will ultimately contain a considerable number of categories of information which will not be published in the Directory. It is hoped that the three card file can be completed by the middle of 1949. IBM operations consume more than one half of the budget of the Bureau.

Two major research projects are still in progress. Reference has already been made in this report to the bibliography on group practice, the first step in the special study of group practice. The establishment of medical service areas has proceeded at a steady pace. They are almost completed in every state. The study probably will be published during the summer of 1949, and when completed will show that everyone in the United States has access to physicians and that each square mile in the United States is located in a medical service area in which there are physicians. This is a joint project with the constituent state medical associations. Some of the state associations have already found their medical service areas useful tools in the field of public relations.

REFERRALS FROM HOUSE OF DELEGATES

The Bureau has noted the recommendation contained in the report of the Committee to Study Conditions of General Practice and Committee on Nursing Problems, which were presented to the House of Delegates at the 1948 annual session. Through its punch card system, the Bureau has accumulated a considerable amount of data on the distribution of physicians. In the Aug. 21, 1948 issue of *THE JOURNAL* the Bureau presented a tabulation of the number of physicians by states; it was noted that the number of physicians had increased 17 per cent, whereas the population had increased only 12 per cent. As the work of

keeping the punch card file progresses the Bureau will offer special tabulations for publication in *THE JOURNAL*. The next will be an age distribution of physicians by states and an estimate of the number of people per physician in each state.

The Reference Committee on Legislation and Public Relations directed the Bureau to study the matter of life insurance fees pursuant to a resolution introduced by a delegate from New Jersey. At the present writing the Bureau is awaiting the compilation of replies to a comprehensive questionnaire survey on medical fees by the life insurance companies. An analysis of this questionnaire will be prepared and made available to the members of the House of Delegates at the December meeting if the survey is completed by November 15.

Bureau of Exhibits

The Bureau of Exhibits has continued to function with greatly increased activities.

The work of the Bureau includes several divisions. The Scientific Exhibit is presented at the Annual and Interim Sessions of the Association under the Committee on Scientific Exhibit of the Board of Trustees. Medical exhibits are prepared with the advice of the various councils and bureaus of the Association and are shown at numerous medical meetings and other scientific organizations. Health exhibits are prepared for use at fairs, expositions and other public gatherings. The subject of medical motion pictures, in which field the Association has assumed leadership, is administered under the guidance of the Committee on Medical Motion Pictures. Other miscellaneous activities connected with graduate medical instruction and health education are also directed to the Bureau.

The staff of the Bureau has remained small, with each division of the work under the management of persons selected for their experience and adaptability in their particular fields.

THE SCIENTIFIC EXHIBIT

The year 1948 is marked by three sessions of the American Medical Association, for each of which a Scientific Exhibit has been prepared. The report of the work of the Bureau in connection with the Interim Session in Cleveland was included in the report to the House of Delegates in June. The program for the Interim Session in St. Louis is in the process of completion.

The Scientific Exhibit at the Chicago Session was an outstanding success. The care with which the exhibitors selected their material, the artistic ability with which they displayed it, the patience and perseverance of the demonstrators through the long days of the week all resulted in crowded aisles. The studious attitude of the physicians present attested to the value of this form of graduate medical instruction.

The Special Exhibit on Fractures was more popular than ever, even though the subject has been shown more or less continuously for twenty years. Dr. Kellogg Speed, Chicago, assisted by a competent committee and a large corps of demonstrators, deserves much credit for this type of presentation.

The Special Exhibit on Physical Medicine, shown for the third time with Dr. Frank H. Krusen, Rochester, Minn., as chairman, not only had a spectacular appeal, but included the practical information necessary for the physician in general practice. The constant throng surrounding the eight booths in the exhibit was an indication of the desire on the part of physicians for more knowledge on the subject.

The Special Exhibit on Fresh Pathologic Material, under the direction of Dr. I. Davidsohn, Chicago, proved a valuable part of the meeting. The cooperation of various hospitals and the continuous demonstrations by competent pathologists attracted a constant attendance of intent observers.

The group of exhibits on diabetes was supplemented by clinical presentations in an adjoining room. Dr. Howard F. Root, Boston, arranged a most attractive program which was one of the most popular features of the meeting.

Cancer detection was emphasized by a group of eleven exhibits presented with the cooperation of the American Cancer Society, the American College of Surgeons and the Cancer Prevention Center of Chicago. The chairman was Dr. Augusta Webster, Chicago.

The medical aspects of atomic energy were featured by a group of ten exhibits which attracted an unusual amount of attention. The Atomic Energy Commission, the Army, Navy and Air Force, as well as individual investigators, participated.

The seventeen sections of the Scientific Assembly presented outstanding groups of exhibits dealing with the various branches of medicine. The exhibits were selected for their suitability for the physician in general practice from 294 applications for space, 169 being selected for the sections and 31 placed in a miscellaneous group. The various sections appointed representatives to advise and assist the Committee on Scientific Exhibit, and each application was submitted to five or more persons separately, from whom it received unanimous approval before acceptance. The largest number of exhibits was presented by the Section on Surgery, General and Abdominal, with 26, while the smallest number was in the Section on Anesthesiology, with 4.

There were 26 awards, consisting of 6 medals, 10 certificates of merit and 10 honorable mentions. In addition, three groups of exhibits received special commendation. The Committee on Awards consisted of Dr. Frank W. Hartman, Detroit, chairman; Dr. Wilbur Bailey, Los Angeles; Dr. David Bosworth, New York; Dr. Deryl Hart, Durham, N. C., and Dr. Joe Vincent Meigs, Boston.

The Committee on Scientific Exhibit worked closely with the Council on Scientific Assembly on the program. Twenty-seven papers read before the Sections were correlated with exhibits.

Motion pictures were shown in two theaters, simultaneously and continuously, in an area adjoining the exhibits. Thirty-seven films were selected from 74 applications, most of the films being previewed by competent consultants before acceptance or rejection. The audiences were large and enthusiastic, a count of the attendance totaling 14,280 persons (this includes duplications of those who stayed to see more than one film). Several of the films illustrated exhibits on the same subject.

ASSOCIATION EXHIBITS

Professional relations with many thousands of physicians, as well as public relations with hundreds of thousands of other persons, were enhanced through exhibits depicting the activities of the various councils and bureaus of the American Medical Association headquarters. The opportunities for this kind of activity are numerous, the audience attend in a receptive mood and the graphic presentations make a lasting visual impression.

The Bureau has on hand forty-eight exhibits, nine old exhibits being discontinued and eight new ones added during the year. Each exhibit is checked and repaired after each trip. At present, working and storage facilities are inadequate for this activity, but it is hoped that with the completion of the addition to the Association's building more space will be available.

One hundred and thirty exhibits were shown, or had been reserved at the time of this report, for 82 meetings during the year, and additional requests are still being received. The demand greatly exceeds the number of exhibits available, especially at certain seasons. There were 38 medical meetings or other professional gatherings, including those of dentists, pharmacists, nurses and various scientific groups, at which 61 exhibits were shown. An attendant from the headquarters staff was present at each of these meetings to demonstrate the exhibit. Sixty-nine exhibits were shown at 44 fairs and expositions, the material being sent out on a loan basis, with a member of the local county or state medical society in charge.

The duration of each exhibit averaged one week, making nearly one thousand days for this group of displays during the year. The exhibits were shown in thirty states and the District of Columbia. Requests from outside the limits of Continental United States were refused because of the cost and difficulties with custom regulations.

MUSEUMS

The several health museums in the country, which are visited by some millions of persons, have had exhibits from the American Medical Association on permanent display. The Cleveland Health Museum, the Toledo Museum of Science, the Dallas Health Museum, and the Chicago Museum of Science and Industry are especially to be commended in this regard. Temporary displays have gone to other museums as well.

The museum is an excellent medium for health education, with a ready made audience which attends in a receptive attitude.

COMMITTEE ON MEDICAL MOTION PICTURES

There has been a considerable increase in all phases of activity over last year. As the Association's motion picture program becomes more widely known, a greater number of medical societies, medical schools, hospitals and individual physicians are calling for various types of service.

Library of Medical Films.—A total of 1,091 films were lent to various organizations and physicians during the first eight months of 1948 in 45 states, as well as to Mexico and Bolivia. In order to help meet the increasing cost of operating the motion picture library, the Committee voted to make a service charge of \$1 per reel (400 feet) for the use of the films, but to date details for handling the problem have not been worked out.

Inasmuch as there are a great many sources of health films, the Committee decided that the American Medical Association should not distribute such films to lay groups. A select group of health films are available, however, to Fellows of the American Medical Association who are called on to speak before service clubs, Parent-Teacher Associations and other public groups. Thirty-three prints of twelve new films were added to the motion picture library during the first eight months of the year.

Reviews of Motion Pictures.—Because of printing difficulties, the number of motion picture reviews published in *THE JOURNAL* was somewhat curtailed; nevertheless, forty-one reviews were published during the eight month period. These reviews are widely read by the medical profession in the United States and foreign countries. A pamphlet has been prepared, containing reprints of the medical motion picture reviews published in *THE JOURNAL* through January 1948. The purpose of these reviews is to provide a brief description and evaluation of motion pictures which are available to the medical profession.

Source List.—The source list of medical films has been revised and brought up to date. Eighty-eight lists also have been prepared on specific subjects, such as pathology, immunology and hematology, containing titles of films on these subjects, where they may be obtained and other information.

The organization of a complete source file of available medical films is progressing slowly.

Special Projects.—The Sears-Roebuck Foundation is sponsoring the production of a motion picture dealing with rural health problems. Assistance has been given the project with background material and advice in the preparation of the script.

The Becton, Dickinson Foundation for the Advancement of Scientific Knowledge is sponsoring a film dealing with "The Physician's Responsibility in the Event of Major Disaster" and a committee of technical advisers has been appointed, consisting of Col. W. L. Wilson, M.C., United States Army, Washington, chairman; Dr. Frank Wilson, American Red Cross, Washington; Dr. Norvin C. Keifer, Chief, Health Emergency Planning Unit, U. S. Public Health Service, Washington; Dr. James C. Sargent, Chairman, Council on National Emergency Medical Service; American Medical Association; Dr. Perrin Long, Technical Medical Adviser to the Director of O.C.D. Planning, Baltimore, and the Secretary of the American Medical Association Committee on Medical Motion Pictures. The film should be in production early in 1949.

In connection with the 1948 Census of Hospitals and Report of Internships and Residencies, four questions concerning motion picture equipment and the use of medical motion pictures have been included in the questionnaire. The results of this preliminary survey should be available to the Committee in February 1949.

During the past eighteen months, the American Medical Association has received approximately seventy-five requests from thirty-three different countries for the loan or purchase of American made medical films. These unsolicited requests have come from medical schools, hospitals and individual physicians.

A survey has been made to determine the number of states which maintain film libraries in connection with the state health

departments. It was found that all of the states have film libraries, but most of them confine distribution to their own states and several restrict distribution to county health departments.

MISCELLANEOUS ACTIVITIES

Numerous talks have been given by members of the staff to scientific groups and luncheon clubs. Conferences with physicians and other persons, both from the United States and foreign countries, have been of almost daily occurrence. Members of the staff have served on many committees of organizations allied to the American Medical Association and have given freely of their knowledge and energy. Pamphlets and articles have been prepared for publication and books reviewed for *THE JOURNAL*.

The preeminent place of leadership which the Association has attained in both the exhibit field and in motion pictures has brought numerous requests for information and advice, all of which have been given careful attention.

Conclusion

Reports of committees, such as the Committee on Hospitals and the Practice of Medicine, the Committee on Nursing Problems which now represents the Association on the Joint Commission for the Improvement of Medical Care, the Committee on Rebates and the Committee on Rural Medical Care will be presented in the Handbook of the House of Delegates or in a Supplementary Report of the Board of Trustees to the House.

Respectfully submitted,

ELMER L. HENDERSON, Chairman.
EDWIN S. HAMILTON, Secretary.
LOUIS H. BAUER.
JOHN H. FITZGIBBON.
JAMES R. MILLER.
WALTER B. MARTIN.
DWIGHT H. MURRAY.
EDWARD J. MCCORMICK.
GUNNAR GUNDERSEN.

REPORT OF COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

To the Members of the House of Delegates of the American Medical Association:

The major concerns of the Council on Medical Education and Hospitals during the six months since it last reported to the House of Delegates have been with the financial support of medical schools, the actions taken by the House of Delegates at the June 1948 Session which were referred to the Council, the Selective Service Act of 1948, and the development of a plan for meeting effectively the Council's increasing responsibilities for the approval of internship and residency training programs.

FINANCIAL SUPPORT OF MEDICAL SCHOOLS

During the last three years the Council has been directing attention to the fact that the major problem currently facing the medical schools of the United States is the need for additional funds for the development and stabilization of their basic educational programs. Inflation, decreased income from endowments and changes in the tax structure which have led to a decrease in the size of individual benefactions, have created a serious problem for the medical schools. This problem affects the schools both with respect to maintaining established programs and with respect to undertaking essential new developments.

In the past year there have been numerous discussions pointing to the possibility that to solve their financial problems the medical schools may have to accept federal subsidy. A bill, S. 2588, to provide such subsidy was introduced into Congress in April 1948 by Senator Thomas of Utah. No hearings were held on the bill, but it may be predicted that bills of a similar nature will be introduced into the next Congress.

The Council has given close study to the financial needs of the medical schools and to the issues involved in federal subsidy of the medical schools. As a result of this study, the Council is strongly of the opinion that before resort is made to federal subsidy an intensive and concerted effort should be made to secure the funds required by the medical schools from voluntary sources. The Council is further of the opinion that there is good reason for believing that, if such an effort is made, support can be obtained in adequate measure.

In June of this year the Council sought and obtained authorization from the Board of Trustees to explore with representatives of the Association of American Medical Colleges and other interested organizations the possibility of establishing a National Foundation for Medical Education which would have as its objective the securing of funds from voluntary sources for the basic support of the medical schools of this country. In July of this year, under the joint sponsorship of the Council and the Association of American Medical Colleges, a meeting was held in New York City of representatives of universities, business, industry, banking, educational foundations and voluntary philanthropic organizations in the health field, to discuss the feasibility of a national campaign for the support of medical education.

After presentation and discussion of the problem, the consensus was that such a campaign was highly desirable and offered definite promise of success. A lay committee was appointed under the chairmanship of Mr. Earl Bunting, Managing Director of the National Association of Manufacturers, to study the problem further and report back to the Council and the Association of American Medical Colleges. During August and September this committee and a subcommittee under the chairmanship of Mr. Earl O. Shreve, President of the United States Chamber of Commerce, held three meetings in New York City. Additional meetings will be held throughout the fall, with the expectation that a definite plan of organization for a National Foundation for Medical Education will be ready for presentation to the Council and the Association of American Medical Colleges by the end of 1948 or the early part of 1949.

It has been a source of great encouragement to observe the deep interest which the leaders of commerce and industry have shown in the problems of the medical schools and the time and energy that they are devoting in seeking a solution. It is too early to judge the final outcome, but it can be said that the outlook for adequate support of the medical schools from voluntary sources is brighter at the present than at any time in recent years.

REPORT ON MATTERS REFERRED TO THE COUNCIL BY THE HOUSE OF DELEGATES

At its June 1948 meeting the House of Delegates referred a number of resolutions to the Council. A summary of the Council's action on these resolutions follows:

Recommendations contained in the Report of the Committee on Intern Placement are:

The amendments to the 1948 Plan for Uniform Intern Placement suggested by the Committee in collaboration with the Joint Intern Committee were approved by the Council and the other organizations sponsoring this plan. The amended plan was published in *THE JOURNAL* Aug. 14, 1948.

The Council is in full accord with the recommendation that hospitals and medical schools which do not cooperate with the plan be reported to the Council for investigation and appropriate action. This recommendation is now being studied by the other agencies sponsoring the Plan for Uniform Placement.

The recommendation that all specialty boards require at least one year of approved rotating internship before allowing a physician to start his specialty training has been forwarded to the Advisory Board for Medical Specialties and will be discussed at the next meeting of the Liaison Committee of the Council and the Advisory Board.

Recommendations concerning the scope, character and duration of an approved rotating internship are being incorporated by the Council in an extensive revision of its "Essentials of An Approved Internship," which the Council now has under preparation. As soon as the revision is completed, the revised "Essentials" will be presented to the House of Delegates for ratification.

The recommendation that specialty boards should be requested to give credit toward certification for work in their respective fields during the second year of a rotating internship has been forwarded to the Advisory Board for Medical Specialties and will be discussed at the next meeting of the Liaison Committee of the Council and the Advisory Board.

With respect to the recommendation that hospitals at present approved for internship should be reappraised on the basis of their educational program for interns, the Council is continuously resurveying and reappraising approved hospitals within the capacity of its staff. A general reappraisal will be initiated after the revised "Essentials of An Approved Internship" have been adopted by the Council and ratified by the House of Delegates.

The recommendation that any hospital which does not provide an adequate educational program for interns may be approved for general residencies has been interpreted by the Council as meaning that hospitals which meet its "Essentials for a General Residency" may be approved even though they may not provide an educational training program for interns. The Council now lists 90 hospitals that are approved for general residencies but not for internships and will add other hospitals to this list as they demonstrate their ability to offer a satisfactory training program.

Resolution that the American Medical Association institute a program to allocate the number of interns of all approved hospitals on an equal basis according to yearly admissions and that this be referred to the Council on Medical Education and Hospitals for consideration. The Council is being guided by this resolution in revising its "Essentials of An Approved Internship."

Recommendations contained in the Report of the Committee to Study Conditions of General Practice are:

That the Council on Medical Education and Hospitals and the Bureau of Medical Economic Research determine whether or not there is need for a large increase in the number of medical graduates and, if so, its extent.

The Council and the Bureau have collaborated in studying this problem. Information provided by the study has served as the basis for an editorial in THE JOURNAL, a report to the National Health Assembly, for talks and discussions by officers of the Association and for replies to numerous inquiries from government agencies, medical societies, universities, the press and individuals. These studies have led to the conclusion that there is no need for any great increase in the number of medical graduates and that the gradual expansion of facilities for medical education that is taking place will adequately meet the nation's needs. The Council will continue to give close attention to this problem.

That the Council on Medical Education and Hospitals proceed with the development of a program for the training of general practitioners in smaller community hospitals.

The Council is formulating standards for residencies in general practice. When these standards have been developed, smaller community hospitals that are willing and prepared to give proper supervision to the training of residents in general practice will receive every encouragement from the Council.

Resolution that the Council investigate the Association of Interns and Medical Students and the Association of International Medical Students as to facts, tendencies, affiliations and objectives.

The Council has this resolution under study but is not yet prepared to report on it.

DEFERMENT OF PREMEDICAL AND MEDICAL STUDENTS UNDER THE SELECTIVE SERVICE ACT OF 1948

The Selective Service Act of 1948 renders liable for service in the armed forces men between 19 and 25 years of age, the age group from which the great majority of premedical and medical students are drawn. Immediately on passage of the act, representatives of the Council and the Association of American Medical Colleges began a series of conferences with officials of the National Headquarters of the Selective Service System to develop a plan for the deferment of all medical students and a sufficient number of premedical students to insure that there would be no reduction in the years ahead of the number of students and graduates. The officials of the Selective Service System have shown a good understanding of the problem and have been very cooperative in approaching the question of deferments. They have made it clear that bona fide medical students and physicians in their first year of internship will be deferred as long as they maintain a satisfactory academic standing. While no announcement has yet been issued concerning the deferment of premedical students, there is every reason to believe that a plan which has the endorsement of the Council and the Association of American Medical Colleges will be officially adopted by the National Headquarters of the Selective Service System at an early date.

PART TIME HOSPITAL INSPECTORS

The reduction in the professional staff of the Council during and immediately after the war and the rapid postwar expansion of residency training programs created serious difficulties for the Council in carrying out its inspection of hospitals holding or seeking approval for internships and residency training.

Even with its staff again at full strength, it became clear to the Council that the backlog of hospitals requiring inspection that had accumulated during the last five years could not be satisfactorily inspected unless a plan was devised for securing the assistance of additional personnel. Accordingly, the Council has requested and obtained from the Board of Trustees permission to enlist the services as part time inspectors of fifteen qualified physicians in different areas of the country. It is planned that each of these inspectors will survey about 40 hospitals during the coming year for a total of 600 hospitals. During the same period, the full time staff of the Council will survey approximately the same number of institutions, so that by the end of 1949 the Council will be operating on a current basis with respect to the inspection of hospitals.

The Council has shared the increasing concern of the House of Delegates, the American Boards and other groups interested in graduate education with respect to the need for a periodic reappraisal of hospitals holding approval for internship and residency training. The Council is confident that once it is operating on a current basis, it should be able to institute a program of triennial reinspection of all approved hospitals and more frequent reinspection of those requiring special attention. Such a program is essential for the maintenance of high standards of graduate training in the hospitals throughout the country.

COLLABORATION AND LIAISON WITH OTHER AGENCIES

The Council has continued to maintain a close liaison with other agencies and organizations active in the field of medical education and hospital affairs. The close relations that the Council enjoys through regularly constituted liaison committees with the Association of American Medical Colleges and the Advisory Board for Medical Specialties have been particularly beneficial. The Council has continued its cooperation with the Army, Navy, the U. S. Public Health Service and the Veterans Administration in the development of their programs for graduate medical training. Collaboration with numerous other agencies in the field of health, medicine and education has continued. These conjoint activities have been varied in nature and have involved members of the Council, the Secretary and the members of the staff of the Council. These cooperative enterprises have included consultations, participation in conferences, meetings, the work of advisory committees and joint sessions. A partial list of the agencies and organizations not mentioned elsewhere in this report with which the Council has collaborated during 1948 includes:

- The American Hospital Association
- The Catholic Hospital Association
- The American Trudeau Society
- American Orthopedic Association
- American Academy of Orthopedic Surgeons
- Southern Medical Association
- National Society for Medical Research
- National Health Assembly
- American College of Surgeons
- Federation of State Medical Boards
- United States Office of Education
- State Department
- Florida State Board of Education
- National Nursing Council
- American Nurses Association
- National Board of Medical Examiners
- American Physiotherapy Association
- American Registry of Physical Therapy Technicians
- American Occupational Therapy Association
- American Association of Medical Record Librarians
- College of American Pathologists
- American College of Radiology
- American Registry of X-ray Technicians
- Board of Registry of Medical Technologists
- State Medical Societies
- County Medical Societies

MEDICAL SCHOOLS

During the first nine months of 1948 the following medical schools were visited for consultation, survey or other purposes:

- Hahnemann Medical College and Hospital of Philadelphia
- Medical College of the State of South Carolina
- University of Oklahoma School of Medicine
- Howard University College of Medicine
- Loyola University School of Medicine
- University of Buffalo School of Medicine

INSPECTION OF HOSPITALS AND TECHNICAL SCHOOLS

Inspections of hospitals and technical schools made by the Council during the first nine months of 1948 may be summarized as follows:

Intern training	26
Residencies and fellowships	136
Intern training and residencies	42
Registration	18
Technical schools	40
Total	262
Individual residencies and fellowships investigated	668

SUMMARY OF HOSPITALS AND TECHNICAL SCHOOLS

Figures for approved hospitals and technical schools with changes occurring during the first nine months of 1948 are as follows:

Registration of Hospitals	
Hospitals registered, Jan. 1, 1948	6,312
New institutions registered to Sept. 30, 1948	125
Closed or transferred to unclassified file	180
Hospitals registered, Sept. 30, 1948	6,257
Internship Approval	
Hospitals approved for intern training, Jan. 1, 1948	812
Approved to Sept. 30, 1948	28
Removed from approved list	6
Hospitals approved for intern training, Sept. 30, 1948	834
Residency Approval	
Hospitals approved for residency training, Jan. 1, 1948	1,086
Approved to Sept. 30, 1948	65
Removed from approved list	20
Hospitals approved for residency training, Sept. 30, 1948	1,131
Medical Technology Schools	
Approved schools, Jan. 1, 1948	308
Approved to Sept. 30, 1948	29
Removed from approved list	0
Approved schools, Sept. 30, 1948	337
Medical Record Librarian Schools	
Approved schools, Jan. 1, 1948	11
Approved to Sept. 30, 1948	1
Removed from approved list	0
Approved schools, Sept. 30, 1948	12
Occupational Therapy Schools	
Approved schools, Jan. 1, 1948	22
Approved to Sept. 30, 1948	3
Removed from approved list	0
Approved schools, Sept. 30, 1948	25
Physical Therapy Schools	
Approved schools, Jan. 1, 1948	26
Approved to Sept. 30, 1948	0
Removed from approved list	1
Approved schools, Sept. 30, 1948	25
X-Ray Schools	
Approved schools, Jan. 1, 1948	183
Approved to Sept. 30, 1948	29
Removed from approved list	1
Approved schools, Sept. 30, 1948	211

COUNCIL PUBLICATIONS

During 1948 the Council was responsible for preparing material for four special numbers of THE JOURNAL:

Internship and Residency Number
State Board Number
Hospital Number
Educational Number

Other regular publications of the Council during the year included:

Postgraduate Courses for Veteran and Civilian Physicians
Approved Examining Boards in Medical Specialties (a Summary of the Requirements for Certification Established by the American Boards)
Proceedings of the 1948 Annual Congress on Medical Education and Licensure (now in press)
Choice of a Medical School
Approved Colleges of Arts and Sciences
Federation Bulletin (a monthly bulletin published for the Federation of State Medical Boards)
Approved Internships
Approved Residencies and Fellowships in the Specialties
Schools for Medical Technologists
Schools for Physical Therapy Technicians
Schools for Occupational Therapy
Schools for Medical Record Librarians
Schools for X-ray Technicians

The Council also has reprinted for distribution a number of articles dealing with questions relating to the Council's work

and responsibilities. In addition, the Council has published numerous statements in THE JOURNAL from time to time concerning current problems.

ELECTION OF DR. WILLIAM LOWRY PRESSLY TO
THE COUNCIL

Dr. William Lowry Pressly of Due West, S. C., was elected by the House of Delegates to fill the vacancy on the Council created by the death of Dr. John H. Musser.

PROFESSIONAL STAFF CHANGES

Dr. Edward H. Leveroos has been made an Associate Secretary of the Council by the Board of Trustees. Dr. Leveroos heads the internship and residency section of the Council's professional staff.

Dr. William W. Southard of Los Angeles and Dr. Robert C. Parkin of New Albin, Iowa, have been appointed to the professional staff. Dr. Edward K. Reid has resigned from the staff to accept a commission in the U. S. Public Health Service.

APPRECIATION

To carry out much of its program the Council on Medical Education and Hospitals must rely on the cooperation of numerous institutions and organizations. In every instance this cooperation has been given willingly and fully. The Council wishes at this time to record its sincere gratitude for the assistance so received. The Council is particularly grateful for the splendid support and cooperation that it has continued to receive from the officers, trustees and members of the House of Delegates of the American Medical Association. Their understanding and willingness to aid in the solution of the many difficult problems that have confronted the Council during the past year have been a continuing source of encouragement and gratification.

Respectfully submitted.

HERMAN G. WEISKOTTEN, Chairman
REGINALD FITZ
RUSSELL L. HADEN
WILLIAM S. MIDDLETON
VICTOR JOHNSON
HARVEY B. STONE
WILLIAM L. PRESSLY
DONALD G. ANDERSON, Secretary.

REPORT OF THE COUNCIL ON
SCIENTIFIC ASSEMBLY

The Council on Scientific Assembly has met three times since the 1948 Annual Session in Chicago, once on July 24 in Chicago and once on September 28 in St. Louis and again on November 13 in Chicago.

The Council offers the Scientific Program for the St. Louis Interim Session as part of its report.

SECTION ON DISEASES OF THE CHEST

The following officers were appointed to serve at the first meeting of the Section on Diseases of the Chest, to be held at the 1949 Annual Session in Atlantic City: Dr. Shelley U. Marietta, Washington, D. C., Chairman; Dr. Harry C. Warren, San Francisco, Vice Chairman, and Dr. Jay Arthur Myers, Minneapolis, Secretary.

After full discussion, the Council ruled that, in accordance with the provisions of the Constitution and By-Laws, a delegate and an alternate delegate to the House of Delegates for the new Section on Diseases of the Chest should be elected by the Section at its first Section meeting.

SECTION ON MISCELLANEOUS TOPICS

The Council allotted two sessions in the Section on Miscellaneous Topics at the 1949 Annual Session in Atlantic City to Physical Medicine and appointed Dr. Howard A. Rusk, New York, to serve as Chairman, and Dr. Frank H. Krusen, Rochester, Minn., as Secretary.

The Council allotted one session in the Section on Miscellaneous Topics at the Atlantic City Session to Allergy and appointed the following officers: Dr. Charles H. Eyerma, St. Louis, Chairman, and Dr. Harry L. Huber, Chicago, Secretary.

The Council considered the desirability of having a session on the History of Medicine at each Annual Session of the American Medical Association. Having in view the relatively small attendance at these meetings in the past, it was the opinion of the Council that historical medicine should be encouraged, nevertheless, and meetings held every second or third year.

ALLOCATION OF SECTION MEETINGS AT THE ANNUAL SESSION

The revised By-Laws adopted at the 1948 Annual Session in Chicago grant to the Council on Scientific Assembly the power of determining the number of sessions, up to a maximum of three, for each section at each annual session. The Council has long been active in surveying the attendance at various section meetings at the annual sessions and, during the last five years at four annual sessions, a count has been made of the approximate attendance at each session of a section meeting, except when two sections combined for one meeting. The figures presented to the Council are contained in the following chart.

Approximate Attendance A. M. A. Section Meetings 1944—1946—1947—1948

	Wednesday				Thursday				Friday			
	1944 Chl.	1946 S. F.	1947 A. C.	1948 Chl.	1944 Chl.	1946 S. F.	1947 A. C.	1948 Chl.	1944 Chl.	1946 S. F.	1947 A. C.	1948 Chl.
Pathology and physiology.....	150	190	120	382	75	100	230	220	75	290	115	132
Experimental medicine and therapeutics.....	200	350	1,000	146	335	400	900	97	...	1,000	...	703
Urology.....	190	290	225	300	180	220	250	185	...	300	130	105
Dermatology and syphilology.....	225	290	500	360	325	300	350	345	175	120	175	250
Preventive and industrial medicine and public health	70	115	150	...	100	60	100	75	70	...	45	...
Gastro-enterology and proctology.....	375	200	700	612	400	165	700	350	...	200	...	...
Anesthesiology.....	120	105	210	131	160	145	150	120	250	120	120	163
Radiology.....	160	160	370	182	100	157	360	183	...	192	170	97
Obstetrics and gynecology.....	500	900	1,100	825	650	700	950	557	650	500	425	...
Surgery.....	1,000	1,100	1,500	775	800	600	800	725	1,300	150	1,200	550
Orthopedic surgery.....	200	240	600	280	150	105	200	225	210	120	165	107
Nervous and mental diseases.....	180	160	185	250	250	135	175	191	...	250	250	102
Laryngology, otology and rhinology.....	190	220	337	147	150	225	300	115	210	192	275	105
Ophthalmology.....	215	250	425	210	250	175	400	157	210	250	250	125
Internal medicine.....	950	1,200	2,350	2,375	1,000	1,100	1,400	2,125	1,300	1,000	1,900	...
Pediatrics.....	1,300	450	1,400	500	1,300	400	1,050	287	1,350	400	650	362
General practice medicine.....	...	250	400	180	...	290	400	275	...	500	120	350
Miscellaneous topics.....	350	...	...	...	325	...	...	...	...	...	...	...
Session on:												
History of medicine.....	...	...	50	...	...	...	...	...	...	...	...	30
Physical medicine.....	...	...	...	...	...	...	240	141	...	...	...	...
Allergy.....	...	...	...	165	...	...	...	...	...	...	410	...
Diseases of chest.....	...	...	...	...	...	...	...	220	...	...	...	...

On the basis of the figures as reported and taking into consideration the space available in appropriate localities in Atlantic City for meetings of the Sections, the Council allotted, for the 1949 session only, the following schedule of section meetings.

Section	Units
Internal Medicine	3
Surgery, General and Abdominal.....	3
Obstetrics	3
Pediatrics	3
General Practice	3
Ophthalmology	2
Laryngology, Otology and Rhinology.....	2
Experimental Medicine and Therapeutics.....	2
Pathology and Physiology.....	2
Nervous and Mental Diseases.....	2
Dermatology and Syphilology.....	2
Urology	2
Orthopedic Surgery	2
Gastro-Enterology and Proctology.....	2
Radiology	2
Anesthesiology	2
Diseases of the Chest.....	2
Preventive and Industrial Medicine and Public Health.....	2

In general the council followed the principle that the five sections with the largest attendance should be allotted three units at each annual session, a unit consisting of a half-day session.

Twelve other sections were allotted two units each, and one, the Section on Preventive and Industrial Medicine and Public Health, a section with attendance reported to be usually less than one hundred at any one session, was allotted only one unit. On further consideration, the Council felt that, although the attendance at meetings of this section, as recorded, was small, the importance of public health and industrial medicine was such that two units should be allocated to this section. Thus the original ruling to allocate only one unit was rescinded, and two units were voted to the Section on Preventive and Industrial Medicine and Public Health.

The Council would call the attention of the House of Delegates to the fact that these allotments of units for each section at the annual session may be changed from year to year. It was the opinion of the Council that when a section, the number of meetings of which had been reduced, demonstrates by increased attendance and a more vital program that more units are warranted, the Council, guided by the attendance and interest shown, may increase the allotment of units to that section. The reverse may also be the case. Inferior programs and poor

attendance will mean less units at the next year's session. The schedule for 1949, therefore, is not rigid, but is subject to review and change each year thereafter.

ANNUAL CONFERENCE OF SECTION SECRETARIES

The Annual Conference of Section Secretaries was held with the Council on Scientific Assembly on Nov. 13, 1948, at the headquarters of the American Medical Association in Chicago, and preparations were made for the usual scheduled section meetings for the 1949 annual session. Those sections which met in the mornings at the annual session in 1948 will meet in the afternoons at the Atlantic City Session.

Respectfully submitted,

HENRY R. VIETS, Chairman.
CHARLES H. PHIFER.
L. W. LARSON.
STANLEY P. REIMANN.
ALPHONSE MCMAHON.
ERNEST E. IRONS, President-Elect.
MORRIS FISHBEIN, Editor,
THE JOURNAL.
GEORGE F. LULL, Secretary.
ERNEST B. HOWARD, Assistant Secretary.

Ex officio.

REPORT OF COUNCIL ON MEDICAL SERVICE

COMMUNITY LEADERSHIP

To the Members of the House of Delegates of the American Medical Association:

Emphasis during 1948 has been placed on community leadership in health problems by county medical societies and to a lesser extent by state medical associations.

Medical Society Surveys.—The first step in community leadership in health problems is to determine the capacity of county medical societies for promoting this leadership. What are the activities of county medical societies? Are they prepared to assume leadership? To answer some of these questions the Council on Medical Service turned directly to the county societies. Contacting all 2,100 component societies was impractical, so that a pilot questionnaire was sent to 250 selected societies in the forty-eight states. The results of the pilot questionnaire are interesting but not too encouraging. Full tabulation has been completed and mimeographed and copies sent to all society secretaries.

As with the component county medical societies, it was necessary to know more about the constituent state medical associations. A questionnaire was forwarded to every state association secretary for the purpose of learning more about activities and work in the health care field.

The information gained from both surveys has enabled the Council to act as a clearing house on medical society activities. The demand for this type of service is continually increasing. Medical societies are rapidly expanding their activities and are anxious to learn of existing experiences. The Council is now in a position to supply information that will assist the societies in developing programs.

Health Councils.—Since the Council on Medical Service first reported to the House of Delegates on health councils in June 1946, the subject has become of widespread interest. This interest has been furthered through the News Letter, regional conferences, a special brochure and correspondence.

Health councils seem to be an excellent medium through which community leadership in health problems may be attained. However, the term health council is used in a variety of ways. It means different things to different persons, and final determination of the use of the term will require further consideration of the entire program.

At present there appear to be three types of general health councils: State health councils, metropolitan health councils and community health councils. The three types are organized in a variety of ways and for a number of different purposes. Best known of the state health councils are those made up of professional groups (such as medical, dental and pharmaceutical), those composed of voluntary health agency representatives and those set up by official action of the state government. Examples of the first are the health councils in Illinois and California, of the second the health councils in Virginia and Vermont and of the third the health council in Indiana.

The metropolitan health councils are those found in cities, usually 50,000 or more in population. These are generally composed of representatives of voluntary health agencies and of the professional societies. Many of them are sponsored and financed by the local community chest agency.

The community, including rural health councils, are probably the latest type to develop. The efforts of the Council on Medical Service in this activity are being coordinated with those of the Committee on Rural Medical Service.

In addition, the term health council is used in a limited sense in connection with school health and public health. There is also a national organization known as the National Health Council which is devoting most of its efforts to the promotion of local health departments or units.

The Council's efforts in this field are primarily devoted to determining the facts, reporting and interpreting these facts to the medical profession and arousing an interest on the part of medical societies in taking a more active part in the work of the health councils.

REGIONAL CONFERENCES

The regional conferences continue to perform a much needed function—the exchange of ideas between the constituent and component medical societies and the American Medical Association. Regional conferences were held in 1948 in Cleveland; Spokane, Wash.; Denver; Philadelphia; Columbia, S. C.; St. Paul, and Tulsa, Okla. A development during 1947-1948 was the joint sponsoring of the regional conferences by the Council on Medical Service, the Council on Industrial Health and the Committee on Rural Medical Service. The purpose of this move is twofold: first, to provide a better picture of the work of the Association and, second, to widen the scope of subjects discussed. If and when the Association funds permit, it is hoped that other councils will find it possible to join in the sponsorship.

NEWS LETTER

The House of Delegates at the 1947 Annual Session recommended "that the Board of Trustees investigate the possibility of extending the news letter mailing list to include all Fellows of the American Medical Association, and if this is impossible that at least it be sent to all officers of component county societies." Inclusion of all Fellows of the Association has not been possible. However, the county medical societies are now receiving the news letter and several state medical associations have offered to mail copies of the news letter to their membership, provided that the Council could supply a sufficient number of copies. The regular mailing list includes approximately 6,000 physicians, auxiliary members and others interested in medical service programs.

SPECIAL PROJECTS

Fund-Raising Groups.—Physicians throughout the nation are feeling the pressure of the increasing demand made on them by the numerous so-called voluntary health organizations. For many years physicians have cooperated with the programs devised by the National Tuberculosis Association, the American Red Cross and the National Association for Crippled Children. Effort has not always been made to devise a program that would be fair to the physician as well as to the public.

More recently the profession has been called on by the American Cancer Society to make its cancer detection program effective. Here, however, the Board of Trustees and the Council on Medical Service of the American Medical Association entered the picture and worked for a realistic policy which included the county medical society and the individual physician. As a result, the American Cancer Society's program has produced many local experiments designed to fit local opinion and needs, with the full approval of the county medical societies. Presently, if the trend continues, the physician will be confronted with even greater demands. Programs are in process by the American Heart Association, the American Diabetes Association and others. In view of this trend, the Council proposes to determine the success that county medical societies have had in serving and coordinating the various programs. Only in this manner will it be possible to set forth sound policies to be used as guide posts for future county medical society relations with voluntary health organizations.

Assistance at the national level would aid materially in protecting the individual physician against undue demands on the part of voluntary health agencies. The Board of Trustees has recognized this in several instances. However, the Council recommends to the House of Delegates that further effort be made to obtain direct representation of the Association on all of the national voluntary health organizations. The Council further believes that it would be helpful to sponsor a coordinating committee, composed of representatives of all such national groups, for the purpose of developing policies applicable at the county medical society level.

GROUP PRACTICE

Interest in group practice has increased during the past two years, particularly among the returning servicemen. The Council has followed the discussions of group practice in the various medical journals.

In June 1947, the House of Delegates approved a resolution referring the study of the question of group practice to the Board of Trustees and suggesting that the Bureau of Medical Economic Research, the Judicial Council, the Council on Medical Service and the Bureau of Legal Medicine and Legislation cooperate in the project. The Board of Trustees, in turn, referred the matter to the Council on Medical Service, requesting the appointment of a subcommittee on group practice. Following these actions the Council requested a conference of headquarters personnel representing the aforementioned groups. At that time the details of the study were given over to the Bureau of Medical Economic Research. Undoubtedly, the Bureau will comment on this in detail in its report.

It is important here to note that when the Trustees referred the question of a group practice study to the Council, they directed the subcommittee and the Judicial Council to draw up standards, although the problem of standards was not considered in the original resolution of the House of Delegates. The Council has discussed at length the possibility of setting standards for group practice and is hesitant to enter into such a project. The Council has, however, requested its subcommittee to keep this problem in mind during the study. Further reports on this subject will be made during or on completion of the study.

COMPULSORY SICKNESS INSURANCE

Public interest in compulsory sickness insurance continues unabated. Requests for information continue to pour in from physicians, students and others preparing speeches and articles or just interested in the subject. The Council wishes to call the attention of the House to a serious situation; that is, to the absence in school, college and public libraries of reference material presenting arguments against compulsory sickness insurance. The Council's correspondence reveals many persons willing to oppose government control of medical care, but handicapped in sources to which they may turn for arguments.

The Council has approached the problem in four ways: first, by maintaining a supply of various reprints and pamphlets for distribution to students, etc.; second, by preparing reference material in bound volume form suitable for library use; third, by making available "loan kits" on the subject for use in cases where detailed reference data are needed, and fourth, by preparing and making available a bibliography on sickness insurance publications.

Literally thousands of articles, pamphlets and speeches are written annually in opposition to government medicine. Most of them are a repetition of nebulous arguments, many of which are thoroughly sound and extremely important but no longer sufficient to satisfy many students, speakers or writers. Basic facts, figures and specific information are too often missing. In an effort to remedy this, the Council staff is reviewing literature on the subject with the view to preparing a series of small booklets suitable to all but the research student. The Council believes that these should be placed in every college, medical school and hospital library. Supplying public and high school libraries is also important, but is too expensive a job for the present.

OTHER PROJECTS

The Council will report in detail in a supplementary report on certain special subjects, that will require current comment, during the Interim Session. Among these are voluntary prepayment medical care plans, union health programs and cash sickness benefits.

STANDARDS OF ACCEPTANCE FOR MEDICAL CARE PLANS

At the 1946 Annual Session the House of Delegates approved the preliminary Standards of Acceptance for Voluntary Prepayment Medical Care Plans as adopted by the Council on Medical Service. At that time, the Council felt that revisions might be desirable from time to time as further information and experience became available.

The Council has constantly maintained that the type and scope of coverage offered by prepayment plans should be subject to the prior approval of constituent and component medical organizations. In keeping with this, it is felt that no one standard should

preclude a locally approved or sponsored plan provided that plan met all other standards.

Certain clarifying amendments have been considered and approved by the Council. The total effect is not changed.

The standards as amended now read as follows:

PROPOSED REVISION OF STANDARDS OF ACCEPTANCE FOR MEDICAL CARE PLANS

Development of plans affecting the distribution of medical care, in accordance with the principles adopted by the House of Delegates, is one of the principal functions of the Council on Medical Service. First in importance in the development of plans affecting the provision of medical care is the utilization of the prepayment method to help spread medical and surgical costs.

The Council on Medical Service suggests that special recognition be granted to plans organized and operated in accordance with standards which adequately protect the interest of the public and the medical profession.

In granting this recognition the Council will consider each prepayment medical care plan in the light of established knowledge, authoritative opinion, and according to standards adopted from time to time by the Council in the interest of the public. Plans that conform with the requirements thus formulated will be accepted by the Council.

The prepayment plan may be underwritten either by voluntary prepayment organizations formed specially for the purpose, or by duly licensed private insurance companies, or by both.

Under the conditions defined in the following paragraphs, the Council grants the right to print its seal on all official papers of accepted plans and in any promotional literature or display material used by these plans.

This official seal should appear without comment on its significance unless such comment has been previously approved by the Council. A statement proposed for such use follows: "the seal of acceptance denotes that (name of plan) has been accepted within the standards set forth by the Council on Medical Service of the American Medical Association."

The acceptance of a plan and the seal of the Council are intended to signify that the plan conforms with or meets the following standards or requirements:

Local Approval: 1. The prepayment plan must have the approval of the state medical association or, if local, of the county medical society in whose area it operates. The state association or county society that sponsors the plan, must retain the right to withdraw its approval and require discontinuance of the use of the seal of acceptance on reasonable notice to the public and to the underwriters.

Professional Responsibility: 2. The medical profession should assume responsibility for the medical services included in the benefits; the medical profession is qualified legally and by education to accept responsibility for the character of the medical services rendered.

(a) The plan should provide for the appointment of a committee by the medical profession in the area served by the plan; one of the duties of this committee shall be the determination of relative values of medical services and procedures as set forth in the plan's published schedule of benefits. The committee may also be authorized to consider difficulties and complaints and make recommendations.

(b) The published schedule of benefits of the plan shall include those services and procedures listed as essential by the Council on Medical Service consistent with the scope of the plan.

Free Choice of Physician: 3. There should be no regulation which restricts free choice of a qualified doctor of medicine in the locality covered by the plan who is willing to give service under the conditions established.

Patient-Physician Relationship: 4. The method of giving the service must retain the personal, confidential relationship between the patient and physician.

Public Policy: 5. The plan should be organized and operated to provide the greatest possible benefits in medical care to the

subscriber. Honesty of purpose and sincere consideration of mutual interests on the part of the subscribers, the physicians and the plans are presupposed as necessary considerations for successful operation.

Type of Benefits: 6. These benefits may be in terms of cash indemnity or medical service. Where benefits are paid in cash to the subscriber it must be clearly stated that these benefits are for the purpose of assisting in paying the charges incurred for medical service and do not necessarily cover the entire cost of medical service, except under specified conditions.

Clarity of Benefits: 7. Subscribers' contracts must state clearly the benefits and conditions under which benefits will be provided. All exclusions, waiting periods, and deductible provisions must be clearly indicated in the promotional literature and in the contracts.

Promotion: 8. Promotional activities must be reasonable without extravagant or misleading statements concerning the benefits to the subscribers. In approving promotional material the Council will endeavor to indicate the type of statements which are acceptable and the nature of those considered objectionable. It is not the function of the Council to edit all copy word for word and sentence for sentence, but rather to indicate the general type of revision required in any given piece of literature. It expects the spirit and intent of such objections to be observed in the remainder of the copy not specifically criticized. Promotional activities will include any devices for informing the public or the profession.

Reports: 9. Each accepted plan must agree to submit reports of financial and enrolment experience in the manner prescribed by the Council.

Safeguards for the Subscriber: 10. The Council will utilize the experience of those plans that are and have been operating successfully as a criterion for judging new plans, but will not discourage experiments in other types of coverage provided such experiments are limited in scope and capable of scientific evaluations. The following principles, however, are laid down as fundamental:

- (a) The dues from subscribers through premium rates should be adequate to provide for the benefits offered and cover the risks involved.
- (b) Enrolment practices shall be based on sound actuarial principles such as will not expose the plan to adverse selection. Group enrolment is recommended until experience warrants the acceptance of individuals.
- (c) It is understood that the plan of organization will conform with state statutes and that the plan will operate on an insurance accounting basis with due consideration for earned and unearned premiums, administrative costs and reserves for contingencies, claims incurred but not paid and unanticipated losses. Each plan must submit reports of financial experience in the manner prescribed by the Council. Supervision should be under the appropriate state authority.
- (d) Provision should be made for a medical director acceptable to the county or state medical society. The medical director may be paid on a per diem basis for the time involved in handling such matters.
- (e) All insurance companies participating in the underwriting of a medical society prepayment plan must be licensed to do business in the state in which the plan is located. Inasmuch as the state insurance authorities supervise the finances and underwriting practices of such companies, the Council will duplicate this function only to the extent it deems necessary.

Duration of Acceptance: Acceptance of plans by the Council will be for a period of two years (provided they comply with the standards during this period) or until revoked. At the end of this period all contracts and financial statements shall be reexamined. A shorter period of approval may be granted at the discretion of the Council. Any changes in contracts or literature during the period of acceptance must be submitted to the Council.

SUGGESTED DEFINITIONS

Methods for improving and for altering the distribution of medical care have been the subject of discussion for many years. These discussions, whether heated debates, partisan declarations or unbiased talks, invariably involve the use of terms the meanings of which are not equally understood by either the listeners or discussants. Even a brief perusal of literature on the subject shows that often the meanings are determined to meet given situations.

Public interest in medical care programs, and therefore in the terms used has reached an all-time high. The American system of medical care is being debated from coast to coast. It is the subject of articles in the leading magazines and of literally thousands of talks and programs.

The Council on Medical Service receives inquiries from all parts of the United States and from all groups of its population. Without exception, the inquiries show confusion as to the meaning of the following terms and the attitude of the American Medical Association toward the methods that these terms involve: socialized medicine; state medicine; sickness insurance; health insurance; compulsory sickness insurance; voluntary medical care insurance; public health; group medical practice; private group clinics, and consumer managed health plans.

In an effort to determine possible definitions of the above terms which might be generally acceptable among the medical profession, the Council has reviewed the books and literature of many authors as well as the actions of the House of Delegates, and has found fairly general agreement on the definitions of all the terms with the exception of the term socialized medicine. The difference of opinion arises in regard to one point and that is whether or not socialized medicine necessarily means government influence or control or whether it merely connotes a form of medical practice in which a method of distributing medical care is made subject to social influences, that is, of groups of persons, the community or the state. Following the opinions of the first group, socialized medicine would be almost synonymous with state medicine. Following the opinions of the second group, socialized medicine would include state medicine, but it would also include the voluntary prepayment plans, sickness insurance, consumer-managed plans, etc.

The term "socialize" according to Webster means "1. To render social, that is, to fit into society; 2. To adapt to social needs or uses such as socializing one's habits, gifts or wealth; 3. To render socialistic in nature or to conform to the theories or practices of socialism." If one accepted either of the first two definitions, then socialized medicine could be used as a general over-all term. However, if one accepts the third definition of Webster, the term socialized medicine might better be limited to government or state medicine. However, in arriving at a set of suggested definitions the Council has leaned primarily on popular usage rather than the dictionary. Most physicians and laymen use the term socialized medicine in referring to government influence or control over medical practice. Rather than try to change the popular conception of the term, the Council has tried to adapt definitions to that conception. Under these definitions, socialized medicine includes state medicine, per se, and compulsory sickness insurance when it is under the direct control of the state. Voluntary sickness insurance is not socialized medicine under the suggested definition nor is group medical practice nor the private group clinics.

The following definitions are submitted to the House of Delegates for consideration:

Socialized Medicine.—Socialized medicine is a system of medical administration by which the government promises or attempts to provide for the medical needs of the entire population or a large part thereof.

State Medicine.—State medicine is a form of socialized medicine in which the government attempts to provide medical services directly to the general population from funds established by taxation. The physicians become employees of the state and medical practice becomes subject to the directives of the third party.

Sickness Insurance.—Sickness insurance is ostensibly a method of transferring the economic burden of sickness from the individual to the group. Sickness insurance may be voluntary or compulsory.

Compulsory Sickness Insurance.—Compulsory sickness insurance is a system of sickness insurance in which all members of a given group of persons in a given governmental area are compelled by law to contribute to and be enrolled in the scheme. Any compulsory sickness insurance program under direct control of the state is socialized medicine, insurance principles no longer prevail and the compulsory contributions become a special tax.

Voluntary Sickness Insurance.—Voluntary sickness insurance is that system whereby individual costs are spread over a period of time by a group of people who voluntarily band together to protect themselves against the economic burden of sickness. It involves the insurance principle and an organized system of payment. It is popularly known as voluntary prepayment medical care insurance.

Public Health.—Public health includes those arrangements whereby the government provides medical services for special groups of persons and undertakes activities which are concerned with the protection of the health of the people as a whole. Public health is concerned with persons requiring institutionalized care, with those who are wards of the government, with the indigent, with proper sanitation, and with the control and prevention of communicable diseases.

Health Insurance.—Health insurance is used interchangeably with sickness insurance and usually means the same thing. It may be voluntary or compulsory, although national health insurance usually means compulsory sickness insurance.

Group Medical Practice.—Group Medical Practice is the application of medical service by a number of physicians working in systematic association with the joint use of equipment and technical personnel and with centralized administration and financial organization.

Private Group Clinics.—The term private group clinics applies to organizations owned and managed by one or more physicians offering medical services. Services are usually supplied by a number of physicians who practice as a group, using joint office facilities and equipment. The physicians are under the supervision of a medical director.

WASHINGTON OFFICE

The special session of Congress adjourned without taking up any matters of importance to the medical profession. During the recess the staff of the Washington office is afforded more time to develop a working liaison with all federal agencies and bureaus dealing with medicine. These agencies welcome the cooperation extended and are very anxious to make available any information desired. As the program progresses, more and more requests to attend public relations and press conferences are received.

At the present time most federal departments are standing by. Few are developing any new policies or plans for several reasons. Outstanding among these is the study being made by the Hoover Commission. The Hoover Commission has begun its monumental task of collating the information it has accumulated. It is expected that out of these surveys, ways to cut the cost of government may be effected. Some of the indicated recommendations to be made include additional assistants to the President, more responsibility placed on the Vice President, an enlarged cabinet to assimilate the scattered agencies and reorganization of the structure of the Veterans Administration and National Military Establishment.

The departments of the Army and the Air Force, through their technical service offices, are developing a large scale promotional plan for recruiting physicians. Their needs seem to be more pressing since the principal responsibility of the draft law has been placed on them.

The department of the Navy has developed a two fold program for the procurement of physicians and dentists—a long range program which involves legislation that must await the new Congress, and a short range plan which is administrative and provides for a series of training and internship plans.

The Public Health Service announced the establishment of the National Heart Institute together with its advisory committee and the National Institute of Dental Health. The

institutes will be located in Bethesda, Maryland. The National Advisory Heart Council held an organizational meeting at which time plans were made to lay a broad attack on heart disease, support research and training and aid states in the development of community educational programs. A second meeting will be held some time in December. Unlike other councils, this Council has a lay representation as well as a professional.

The National Cancer Institute announced grants of more than \$1,300,000 to finance cancer control and research work in twenty-six states, the District of Columbia, Puerto Rico, Canada and France. The grants were made to forty-six laboratory and clinical research projects, five construction projects, twenty special control projects, nine medical schools to improve cancer teaching courses, and eight dental schools for teaching oral cancer diagnosis. Since the beginning of the program less than a year ago, more than one hundred medical and dental schools have qualified for financial aid. All but twelve of the recognized medical and dental schools are receiving grants from the Cancer Institute.

The Employee Health Program, as provided under Public Law number 659 enacted by the 79th Congress, is well under way with the opening of the first major plan at the Denver Federal Center. Since the beginning of the program surveys have been completed in Denver, Kansas City, Chicago and New Orleans. A survey is now in progress in Boston. In Washington, D. C., there are 125 health units coordinated under this law, some operated through contractual agreement by the Public Health Service and others operated by the individual federal departments.

There are plans in the making to remove certain obstacles of the basic act of the Public Health Service which have been found to be inoperative and administratively unwise. Existing language establishing the various advisory councils of the institutes is to be revised to provide lay representation as well as professional, similar to the councils that were established in conjunction with the heart and dental institutes.

A member of the staff of the Washington office assisted the Bureau of Medical Economic Research in checking statistics used in preparation of one of its reports, and at the request of the Bureau of Legal Medicine and Legislation discussed with the Bureau of Employees' Compensation the feasibility of changing existing law to provide for choice of physician for injured personnel of the federal government. The latter bureau is also being assisted in the collection of information relative to medical service fees and fee schedules paid to civilian physicians by the various government agencies.

Some interesting reports soon to be released, or that have been released recently, are the Gray Report on Civilian Components (the findings of a committee appointed by the Secretary of Defense to make "a comprehensive, objective and impartial study of the reserve forces of the armed forces"), the report of the Civilian Defense Planning Board, and a study which is being conducted by the Technical Services of the Army in conjunction with the Troop Attitude Research on the Medical Department of the Army.

When Mr. Ewing distributed his report to the President, "The Nation's Health," he presented the Washington office with 25 copies from which a copy was mailed to each member of the Council and the Board of Trustees.

Respectfully submitted.

JAMES R. McVAY, Chairman
ELMER HESS, Vice Chairman
JESSE D. HAMER
J. D. MCCARTHY
THOMAS A. MCGOLDRICK
H. B. MULHOLLAND
R. L. SENSENICH
WALTER B. MARTIN
EDWARD L. BORTZ
GEORGE F. LULL
THOMAS A. HENDRICKS, Secretary
JOSEPH S. LAWRENCE, Director,
Washington Office.

CONFERENCE ON NATIONAL MEDICAL PUBLIC RELATIONS

Hotel Statler, St. Louis

SATURDAY, NOV. 27, 1948

Registration: 11:00 a. m.

LUNCHEON SESSION:

GEORGE F. LULL, Chicago, Presiding

12:00 noon. Welcome to Public Relations Delegates.

1:05 p. m. Conference Observations.

LAWRENCE W. REMBER, Chicago.

1:15 p. m. The Public Speaks on Health.

CLAUDE ROBINSON, President, Opinion
Research Corporation, Princeton, N. J.

1:45 p. m. Announcements Regarding the Afternoon
Workshop Session Topics and Place of
Meeting.

PROBLEM CLINIC

WORKSHOP SESSION:

2:00 p. m. Selling the Need for Public Relations to the
Medical Profession.

LESTER H. PERRY, Harrisburg, Pa.

2:25 p. m. Using Public Relations to Promote Medical
Prepayment Plans.

CHARLES G. HAYDEN, Boston.

2:50 p. m. Setting Up a Workable System for Handling
Night Calls.

THEODORE WIPRUD, Washington, D. C.

3:15 p. m. Intermission.

3:30 p. m. The Rebate Problem.

CLEM WHITAKER, San Francisco.

3:55 p. m. How to Develop Good Will with Labor,
Farm and Industrial Groups.

C. H. CROWNHART, Madison, Wis.

4:20 p. m. Cooperating with Health Agencies.

HENRY S. JOHNSON, Richmond, Va.

Question and Answer Period will follow each
of the above six topics.

4:45 p. m. Five Minute Survey of Workshop Session.

4:50 p. m. Intermission.

SOCIAL AND DINNER SESSION:

ELMER L. HENDERSON, Louisville, Ky., Presiding.

5:30 p. m. Cocktails and Entertainment.

6:45 p. m. Dinner at which Special Guests will be
Introduced.

8:00 p. m. Summary of Conference Accomplishments.

8:05 p. m. Yes, the Profession Needs PR.

R. L. SENSENICH, South Bend, Ind.

8:10 p. m. What Public Relations Did for Us.

CONGER REYNOLDS, Director of Public Rela-
tions, Standard Oil Company of Indiana,
Chicago.

9:00 p. m. Adjournment.

ANNUAL CONFERENCE OF STATE SECRETARIES AND EDITORS

Hotel Statler, St. Louis

NOV. 28 AND 29, 1948

SUNDAY, NOV. 28, 1948

9:00 a. m. Registration.

10:00 a. m. Legislation, American Medical Association,
State and Government.

11:00 a. m. Osteopathy in Its Relationship to Medicine.

12:00 noon Intermission for Luncheon.

2:00 p. m.—4:30 p. m. Round Table Discussion.

(a) Medical Association Radio Programs.

(b) Legislation.

(c) Prepayment Medical Care Plans.

5:00 p. m. Intermission.

7:00 p. m. Dinner Meeting: "Clinic" on State Medical
Journals.

(a) Editorial Content.

(b) Editorial Format and Makeup.

MONDAY, NOV. 29, 1948

9:30 a. m. General Session.

Roundup on Prepayment Plans.

Ten Minute Reports by Moderators of Round
Table Discussions.

Emergency Medical Service.

GRASS ROOTS CONFERENCE

Crystal Room, Jefferson Hotel

TUESDAY, DEC. 1, 7:00 p. m.

A. M. MITCHELL, Terre Haute, Ind., Chairman

7:00 p. m. Registration.

7:30 p. m. Panel I: Relation of the Doctor to National
Preparedness.

Guest Speakers to present:

1. The Point of View of the Armed
Services.

2. The Point of View of the Medical
Profession.

Open Question and Answer Period.

8:45 p. m. Panel II: The Public, the Doctor and
"Socialized Medicine."

Guest Speakers to present:

1. Implications of the National Health
Assembly and the Ewing Report.

2. Facts from the Brookings Institution
Report.

3. Results of European Experiences.

Open Question and Answer Period.

SCIENTIFIC PROGRAM

Municipal Auditorium

TUESDAY, NOV. 30, 1948

GENERAL LECTURES

IN OPERA HOUSE

2:00 p. m. Present Day Status of the Treatment of
Hypertension.

IRVINE H. PAGE, Cleveland.

2:30 p. m. The Management of Prolonged Labor.

RALPH REIS, Chicago.

3:00 p. m. Intermission.

CLINICAL PRESENTATIONS

IN ROOM 5-1: OBSTETRICS

3:30 p. m. Breech Delivery (Mannikin).

THOMAS M. MIER, St. Louis.

4:00 p. m. The Normal and Abnormal Third Stage of
Labor.

T. K. BROWN, St. Louis.

4:30 p. m. Roentgen Ray Pelvimetry.

RUSSELL L. NICHOLS, Chicago.

IN ROOM S-2: POLIOMYELITIS

- 3:30 p. m. The Care of the Poliomyelitis Patient in the Acute Stage.
THOMAS GUCKER III, SHIRLEY COGLAND and THERESA FALLON, The Children's Hospital, Boston.
- 4:00 p. m. The Care of the Poliomyelitis Patient in the Convalescent Stage.
ROBERT L. BENNETT, HELEN VAUGHN and CHARLOTTE STEITZ, Georgia Warm Springs Foundation, Warm Springs, Ga.
- 4:30 p. m. The Care of the Poliomyelitis Patient in the Final Rehabilitation Stage.
HOWARD A. RUSK, GEORGE G. DEEVER, DONALD A. COVALT, MILDRED ELSON and BARBARA WHITE, New York University, Department of Rehabilitation and Physical Medicine, New York.

IN ROOM S-3: ARTHRITIS

- 3:30 p. m. Rheumatoid Arthritis
DONALD F. HILL, Tucson, Ariz.
- 4:00 p. m. Osteoarthritis EVAN M. BARTON, Chicago.
- 4:30 p. m. Miscellaneous Rheumatic Diseases.
EDWARD F. ROSENBERG, Chicago.

IN ROOM S-6: CANCER

- 3:30 p. m. Radical Neck Dissection for Cancer of the Buccal Cavity and Lip.
JAMES B. BROWN and FRANK McDOWELL, St. Louis.
- 4:00 p. m. A Radical Operation for Cancer of the Breast.
WILLIAM E. LIGHTON and JOHN S. SCIORTINO, St. Louis.
- 4:30 p. m. Transvaginal X-Radiation for Cancer of the Uterine Cervix.
A. N. ARNESON and SHERWOOD MOORE, St. Louis.

IN ROOM S-7: ROENTGEN DIAGNOSIS

EDWIN C. ERNST, St. Louis, Presiding

- 3:30 p. m. The Uses and Abuses of Fluoroscopy with a Discussion of the Interpretation of Chest Films.
IRA H. LOCKWOOD, Kansas City, Mo.
- 4:00 p. m. Rectal Bleeding and What Should Be Done to Determine Its Cause.
GEORGE M. WYATT, Washington, D. C.
- 4:30 p. m. Cancer of the Lung: Its Appearance on the X-Ray Film and What Is Necessary to Establish a Diagnosis.
JAMES DOUGLAS, Louisville, Ky.

IN ROOM S-8: LABORATORY DIAGNOSIS

ROBERT A. MOORE, St. Louis, Presiding

- 3:30 p. m. Renal Function Studies in the Diagnosis of Diseases of the Kidney.
F. WILLIAM SUNDERMAN, Cleveland.
- 4:00 p. m. The Cytologic Diagnosis of Early Cancer.
JOHN B. FRERICH, St. Louis.
- 4:30 p. m. Determination of Prothrombin with Particular Reference to the Use of Anticoagulants in Therapy. E. D. WARNER, Iowa City.

IN ROOM S-10: HYPERTENSION

- 3:30 p. m. Rehabilitation: Its Place in the Management of Cardiovascular Problems.
HOWARD A. RUSK, New York.
- 4:00 p. m. Cerebral Complications of Hypertension.
G. WILSE ROBINSON, Kansas City, Mo.

4:30 p. m. Peripheral Vascular Disease.

E. V. ALLEN, Rochester, Minn.

There will also be demonstrations from 3:00 p. m. to 5:30 p. m. in the Exhibit on Diabetes in the Scientific Exhibit by Drs. H. F. Root, Boston, and W. H. Olmsted, St. Louis.

WEDNESDAY, DEC. 1, 1948

GENERAL LECTURES

IN OPERA HOUSE

- 9:00 a. m. The Role of the General Practitioner in Child Health Care.
HUGH McCULLOCH, St. Louis.
- 9:30 a. m. Diagnosis and Control of Disease.
FRANK W. KONZELMANN, Atlantic City, N. J.
- 10:00 a. m. Intermission.

IN ASSEMBLY ROOM 1

- 2:00 p. m. Arthritis.
EDWARD F. ROSENBERG, Chicago.
- 2:30 p. m. A Résumé of the Skin Diseases That Are Most Commonly Seen in General Practice.
EVERETT C. FOX, Dallas, Texas.
- 3:00 p. m. Intermission.

CLINICAL PRESENTATIONS

IN ROOM S-1: PEDIATRICS

- 10:30 a. m. Problem of Nutrition in the Sick Infant.
PETER G. DANIS, St. Louis.
- 11:00 a. m. Management of the Newborn Infant.
JOSEPH C. JAUDON, St. Louis.
- 11:30 a. m. Practical Consideration of Mental Health of the Child.
ALFRED S. SCHWARTZ, St. Louis.
- 12:00 noon. Intermission.

OBSTETRICS

- 3:30 p. m. Induction of Labor.
MELVIN A. ROBLEE, St. Louis.
- 4:00 p. m. Dystocia Due to Pelvic Neoplasms.
SIM B. LOVELADY, Rochester, Minn.
- 4:30 p. m. Treatment of Asphyxia of the Newborn.
JOSEPH A. MCNEARNEY, St. Louis.

IN ROOM S-2: POLIOMYELITIS

- 10:30 a. m. The Care of the Poliomyelitis Patient in the Acute Stage.
THOMAS GUCKER III, SHIRLEY COGLAND and THERESA FALLON, The Children's Hospital, Boston.
- 11:00 a. m. The Care of the Poliomyelitis Patient in the Convalescent Stage.
ROBERT L. BENNETT, HELEN VAUGHN and CHARLOTTE STEITZ, Georgia Warm Springs Foundation, Warm Springs, Ga.
- 11:30 a. m. The Care of the Poliomyelitis Patient in the Final Rehabilitation Stage.
HOWARD A. RUSK, GEORGE G. DEEVER, DONALD A. COVALT, MILDRED ELSON and BARBARA WHITE, New York University, Department of Rehabilitation and Physical Medicine, New York.

12:00 noon. Intermission.

- 3:30 p. m. The Care of the Poliomyelitis Patient in the Acute Stage.
THOMAS GUCKER III, SHIRLEY COGLAND and THERESA FALLON, The Children's Hospital, Boston.

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HOWARD A. RUSK, GEORGE G. DEEVER, DONALD A. COVALT, MILDRED ELSON and BARBARA WHITE, New York University, Department of Rehabilitation and Physical Medicine, New York.

IN ROOM S-3: DIABETES

- 10:00 a. m. Management of the Newly Discovered Diabetic Patient.
E. PAUL SHERIDAN, Denver.
- 10:30 a. m. Control of Juvenile Diabetics.
JULIAN D. BOYD, Iowa City.
- 11:00 a. m. Medical Problems in Surgical Diabetes.
HOWARD F. ROOT, Boston.
- 11:30 a. m. Transmetatarsal Amputations.
L. S. MCKITTRICK, Boston.
- 1:00 p. m. Intermission.
- 12:00 noon. Insulin Resistance.
I. A. MIRSKY, Cincinnati.
- 12:30 p. m. Difficulties in the Use of Insulin.
H. B. MULHOLLAND, Charlottesville, Va.
- 3:00 p. m. Adjustment of Diet and the Newer Insulins.
F. B. PECK, Indianapolis.
- 3:30 p. m. Insulin Mixtures.
CYRIL M. MACBRYDE, St. Louis.
- 4:00 p. m. Insulin Dosage in Severe Cases.
LEON S. SMOLO, Birmingham, Ala.
- 4:30 p. m. Diabetic Neuritis.
RALPH W. RUNDLES, Durham, N. C.

IN ROOM S-6: DERMATOLOGY

RICHARD S. WEISS, St. Louis, Presiding

- 10:30 a. m. Ringworm Infections of the Skin.
JOHN E. DALTON, Indianapolis.
- 11:00 a. m. The So-Called Precancerous Lesions of the Skin.
M. F. ENGMAN, JR., St. Louis.
- 11:30 a. m. Carcinoma of the Skin.
M. D. MARCUS, St. Louis.
- 12:00 noon. Intermission.

CANCER

- 3:30 p. m. Clinical Evaluation of the Newer Methods of Radium Therapy in Cancer of the Uterine Cervix.
EDWIN C. ERNST, St. Louis.
- 4:00 p. m. Bronchogenic Carcinoma.
E. A. GRAHAM and THOMAS H. BURFORD, St. Louis, and LAUREN ACKERMAN, Columbia, Mo.
- 4:30 p. m. Diagnosis of Cancer of the Head and Neck.
LOUIS H. JORSTAD, St. Louis.

IN ROOM S-7: ROENTGEN DIAGNOSIS

JOSEPH C. PEDEN, St. Louis, Presiding

- 10:30 a. m. The X-Ray Diagnosis of Arthritis and of Bone Tumors. R. T. LEVIN, Indianapolis.
- 11:00 a. m. Pulmonary Tuberculosis: The Clinical Significance of Microfilm Surveys.
THEODORE F. HILBISH, Washington, D. C.
- 11:30 a. m. The Diagnosis of Pulmonary Tuberculosis in Early Moderately Advanced and Advanced Stages: Its Appearance on Chest Films.
LEROY SANTE, St. Louis.

12 noon. Intermission.

3:30 p. m. X-Ray Diagnosis of Cardiovascular Diseases.
RAYMOND R. LANIER, Chicago.

4:00 p. m. Congenital Heart Disease: The Importance of Determining Its Type by Angiography.
WENDELL G. SCOTT, St. Louis.

4:30 p. m. Myelography: Its Indications and Diagnostic Significance.
JOHN D. CAMP, Rochester, Minn.

IN ROOM S-8: LABORATORY DIAGNOSIS

FRANK W. KONZELMANN, Atlantic City, N. J., Presiding

10:30 a. m. Renal Function Studies in the Diagnosis of Diseases of the Kidney.
F. WILLIAM SUNDERMAN, Cleveland.

11:00 a. m. The Cytologic Diagnosis of Early Cancer.
JOHN B. FRERICH, St. Louis.

11:30 a. m. Determination of Prothrombin with Particular Reference to the Use of Anticoagulants in Therapy. E. D. WARNER, Iowa City.

12:00 noon. Intermission.

HENRY PINKERTON, St. Louis, Presiding

3:30 p. m. Histoplasmosis.
PARKER R. BEAMER, St. Louis.

4:00 p. m. The Differential Diagnosis of Jaundice by Laboratory Methods.
FRANK W. KONZELMANN, Atlantic City, N. J.

4:30 p. m. Hypoglycemic and Hyperglycemic States.
PAUL CUTLER, Atlantic City, N. J.

IN ROOM S-10: HEMATURIA

A. N. ARNESON, St. Louis, Presiding

10:30 a. m. Common Causes of Hematuria.
EDWIN DAVIS, Omaha, and L. W. LEE, Denver.

11:00 a. m. Consideration of the Cause of Hematuria from the General Practitioner's Standpoint.
NORRIS J. HECKEL, Chicago.

11:30 a. m. Cystoscopic Examination: Its Importance and Necessity.
H. FAY H. JONES, Little Rock, Ark.

HEART

3:30 p. m. Diagnosis and Treatment of Cardiac Neurosis.
GILBERT H. MARQUARDT, Chicago.

4:00 p. m. Therapy of Chronic Coronary Disease.
ROBERT S. BERGHOFF, Chicago.

4:30 p. m. Management of Rheumatic Heart Disease.
A. GRAHAM ASHER, Kansas City, Mo.

THURSDAY, DEC. 2, 1948

GENERAL LECTURES

IN OPERA HOUSE

9:00 a. m. Hematuria. CYRUS E. BURFORD, St. Louis.

9:30 a. m. The Clinical Significance of Jaundice.
SIDNEY A. PORTIS, Chicago.

10:00 a. m. Intermission.

2:00 p. m. The Diagnosis and Early Treatment of Poliomyelitis.
THOMAS GUCKER III, Boston.

2:30 p. m. Myocardial Insufficiency and Its Management.
GEORGE R. HERRMANN, Galveston, Texas.

CLINICAL PRESENTATIONS

IN ROOM S-1: PEDIATRICS

10:30 a. m. Management of Congenital Heart Disease.
MERL J. CARSON, St. Louis.

- 11:00 a. m. Parenteral Fluid Therapy in Children.
GILBERT B. FORBES, St. Louis.
- 11:30 a. m. Recent Advances in the Care of the Pre-mature Infant.
JACKSON K. ETO, St. Louis.
- 12:00 noon. Intermission.

OBSTETRICS

- 3:30 p. m. Low and Outlet Forceps (Mannikin).
ROY V. BROEDEKER, St. Louis.
- 4:00 p. m. Modern Concepts in Management of Heart Disease and Pregnancy.
WILLIS E. BROWN, Iowa City.
- 4:30 p. m. Emergency Treatment of Antepartum Hemorrhage.
CARL P. HUBER, Indianapolis.

IN ROOM S-2: POLIOMYELITIS

- 10:30 a. m. The Care of the Poliomyelitis Patient in the Acute Stage.
THOMAS GUCKER III, SHIRLEY COGLAND and THERESA FALLON, The Children's Hospital, Boston.
- 11:00 a. m. The Care of the Poliomyelitis Patient in the Convalescent Stage.
ROBERT L. BENNETT, HELEN VAUGHN and CHARLOTTE STEITZ, Georgia Warm Springs Foundation, Warm Springs, Ga.
- 11:30 a. m. The Care of the Poliomyelitis Patient in the Final Rehabilitation Stage.
HOWARD A. RUSK, GEORGE G. DEAVER, DONALD A. COVALT, MILDRED ELSON and BARBARA WHITE, New York University, Department of Rehabilitation and Physical Medicine, New York.

12:00 noon. Intermission.

- 3:30 p. m. The Care of the Poliomyelitis Patient in the Acute Stage.
THOMAS GUCKER III, SHIRLEY COGLAND and THERESA FALLON, The Children's Hospital, Boston.
- 4:00 p. m. The Care of the Poliomyelitis Patient in the Convalescent Stage.
ROBERT L. BENNETT, HELEN VAUGHN and CHARLOTTE STEITZ, Georgia Warm Springs Foundation, Warm Springs, Ga.
- 4:30 p. m. The Care of the Poliomyelitis Patient in the Final Rehabilitation Stage.
HOWARD A. RUSK, GEORGE G. DEAVER, DONALD A. COVALT, MILDRED ELSON and BARBARA WHITE, New York University, Department of Rehabilitation and Physical Medicine, New York.

IN ROOM S-3: DIABETES

- 10:00 a. m. Diagnosis of Diabetes.
JOSEPH C. EDWARDS, St. Louis.
- 10:30 a. m. Coronary Disease in Middle Age.
O. P. J. FALK, St. Louis.
- 11:00 a. m. Surgery and Diabetic Management.
C. C. COGGESHALL, Chicago.
- 11:30 a. m. Rapid Blood Sugar Method.
H. L. C. WILKERSON, Boston.
- 12:00 noon. Hypoglycemia.
C. W. STYRON, Raleigh, N. C.
- 12:30 p. m. Treatment of Gangrene.
C. C. FRANSEEN, Newton Centre, Mass.

1:00 p. m. Intermission.

- 3:00 p. m. Coma.
H. F. ROOT, Boston.
- 3:30 p. m. Pregnancy.
T. P. SHARKEY, Dayton, Ohio.

- 4:00 p. m. Lipotropic Substances.
G. O. BROUN, St. Louis.
- 4:30 p. m. Nocturnal Diarrhea.
WAYNE O. GORLA, St. Louis.

IN ROOM S-6: DERMATOLOGY

GAROLD V. STRYKER, St. Louis, Presiding

- 10:30 a. m. Acne Vulgaris.
NORMAN TOBIAS, St. Louis.
- 11:00 a. m. Vitamin Deficiency.
JOSEPH GRINDON JR., St. Louis.
- 11:30 a. m. Pus Infections of the Skin.
HYMAN G. GOLDMAN, St. Louis.
- 12:00 noon. Intermission.

CANCER

- 3:30 p. m. Diagnosis of Carcinoma of the Face and Eyelids.
CHARLES F. SHERWIN, St. Louis.
- 4:00 p. m. Surgical Pathology of the Alimentary Tract.
J. W. THOMPSON, St. Louis.
- 4:30 p. m. Radioactive Phosphorus Therapy of Chronic Leukemia.
EDWARD H. REINHARD, St. Louis.

IN ROOM S-7: JAUNDICE

- 10:30 a. m. Portal Cirrhosis.
G. O. BROUN, St. Louis.
- 11:15 a. m. Homologous Serum Jaundice.
BRUCE D. KENAMORE, St. Louis.

12:00 noon. Intermission.

- 3:30 p. m. Cancer of Hepatic Ducts and Portal Thrombosis as a Cause of Jaundice.
BARRETT L. TAUSSIG, St. Louis.
- 4:15 p. m. Infectious Hepatitis.
HAROLD SCHEFF, St. Louis.

IN ROOM S-8: LABORATORY DIAGNOSIS

HOLLIS N. ALLEN, St. Louis, Presiding

- 10:30 a. m. Histoplasmosis.
PARKER R. BEAMER, St. Louis.
- 11:00 a. m. The Differential Diagnosis of Jaundice by Laboratory Methods.
FRANK W. KONZELMANN, Atlantic City, N. J.
- 11:30 a. m. Hypoglycemic and Hyperglycemic States.
PAUL CUTLER, Atlantic City, N. J.

12:00 noon. Intermission.

SAM GRAY, St. Louis, Presiding

- 3:30 p. m. The Leukocyte in Disease.
GUSTAVE J. DAMMIN, St. Louis.
- 4:00 p. m. The Red Blood Cell in Anemia.
ARTHUR H. SANFORD, Rochester, Minn.
- 4:30 p. m. The Spinal Fluid in Disease.
R. O. MUETHER, St. Louis.

IN ROOM S-10: HEMATURIA

E. L. KEYES, St. Louis, Presiding

- 10:30 a. m. Radiographic Studies.
R. LEE HOFFMANN, Kansas City, Mo.
- 11:00 a. m. Lower Urinary Tract Lesions Producing Hematuria.
THOMAS MOORE, Memphis, Tenn.
- 11:30 a. m. Upper Urinary Tract Lesions Producing Hematuria.
ELMER HESS, Erie, Pa.

12:00 noon. Intermission.

HEART

- 3:30 p. m. Nutritional Factors in Chronic Cardiovascular Disease.
TOM D. SPIES, Birmingham, Ala., and ROBERT S. STONE, San Francisco.

- 4:00 p. m. Management of the Hypertensive Heart.
GEORGE R. IHRMANN, Galveston, Texas.
4:30 p. m. Anticoagulant Therapy in Coronary Occlusion.
E. STURLING NICHOL, Miami, Fla.

FRIDAY, DEC. 3, 1948

GENERAL LECTURES

IN OPERA HOUSE

- 9:00 a. m. Cancer. C. P. RHODANS, New York.
9:30 a. m. Diabetes. E. P. JOSLIN, Boston.

CLINICAL PRESENTATIONS

IN ROOM S-1: PEDIATRICS

- 10:30 a. m. Practical Consideration of the Endocrine Problem of Childhood.
MAX DEUTCH, St. Louis.
11:00 a. m. Recent Advances in Immunization Procedures.
JEAN V. J. COOKE, St. Louis.
11:30 a. m. Points in Diagnostic Pediatric Radiology.
DON C. WEIR, St. Louis.

IN ROOM S-2: POLIOMYELITIS

- 10:30 a. m. The Care of the Poliomyelitis Patient in the Acute Stage.
THOMAS GUCKER III, SHIRLEY COGLAND and THERESA FALLON, The Children's Hospital, Boston.
11:00 a. m. The Care of the Poliomyelitis Patient in the Convalescent Stage.
ROBERT L. BENNETT, HELEN VAUGHN and CHARLOTTE STEITZ, Georgia Warm Springs Foundation, Warm Springs, Ga.
11:30 a. m. The Care of the Poliomyelitis Patient in the Final Rehabilitation Stage.
HOWARD A. RUSK, GEORGE G. DEEVER, DONALD A. COVALT, MILDRED ELSON and BARBARA WHITE, New York University, Department of Rehabilitation and Physical Medicine, New York.

IN ROOM S-3: ARTHRITIS

- 10:30 a. m. Rheumatoid Arthritis.
DONALD F. HILL, Tucson, Ariz.
11:00 a. m. Rheumatoid Spondylitis.
CHARLES J. SMYTH, Eloise, Mich.
11:30 a. m. Gout.
HOWARD F. POLLEY, Rochester, Minn.

IN ROOM S-6: DERMATOLOGY

- A. W. CONRAD, St. Louis, Presiding
10:30 a. m. Contact Dermatitis.
W. A. SHOWMAN, Tulsa, Okla.

- 11:00 a. m. Psoriasis and Seborrhea.
ROY L. KILE, Cincinnati.
11:30 a. m. Lupus Erythematosus.
JOHN H. LAMB, Oklahoma City.

IN ROOM S-7: JAUNDICE

- 10:30 a. m. Liver Biopsies.
W. A. KNIGHT, St. Louis.
11:15 a. m. Summary of Clinical Presentations.
SIDNEY A. PORTIS, Chicago.

IN ROOM S-8: LABORATORY DIAGNOSIS

- JOHN A. SAXTON, St. Louis, Presiding
10:30 a. m. The Leukocyte in Disease.
GUSTAVE J. DAMMIN, St. Louis.
11:00 a. m. The Red Blood Cell in Anemia.
ARTHUR H. SANFORD, Rochester, Minn.
11:30 a. m. The Spinal Fluid in Disease.
R. O. MUETHER, St. Louis.

IN ROOM S-10: HEMATURIA

- LOUIS H. JORSTAD, Presiding
10:30 a. m. Treatment of Hematuria Associated with Infection.
WILLIAM N. WISHARD JR., Indianapolis.
11:00 a. m. Hematuria Associated with Stone and Obstruction.
ROY B. HENLINE, New York.
11:30 a. m. Hematuria Associated with Tumor.
JAMES C. SARGENT, Milwaukee.

There will also be demonstrations from 10:00 a. m. to 12:00 noon in the Exhibit on Diabetes in the Scientific Exhibit by Drs. Elliott P. Joslin and Allen P. Joslin, Boston, and Daniel L. Sexton, St. Louis.

TELEVISION

TUESDAY, Nov. 30, 1948

- 2:00 p. m.—3:15 p. m. Medical Clinic, Firmin Desloge Hospital.
3:15 p. m.—4:00 p. m. Operative Clinic, Firmin Desloge Hospital.

WEDNESDAY, DEC. 1, 1948

- 9:30 a. m.—12:00 noon. Operative Clinic, St. Mary's Hospital.
2:00 p. m.—3:15 p. m. Medical Clinic, St. Mary's Hospital.
3:15 p. m.—4:00 p. m. Operative Clinic, St. Mary's Hospital.

THURSDAY, DEC 2, 1948

- 9:30 a. m.—12:00 noon. Operative Clinic, Barnes Hospital.
2:00 p. m.—4:00 p. m. Operative Clinic, Barnes Hospital.

FRIDAY, DEC 3, 1948

- 9:30 a. m.—12:00 noon. Medical Clinic, Barnes Hospital.

ENTERTAINMENT AT THE ST. LOUIS SESSION

An unusual feature of the St. Louis session is an evening devoted entirely to entertainment with an exceptional program.

Physicians registered at the session, their wives and members of their families will be admitted. Admission will be exclusively by ticket. Tickets will be issued at the time of registration.

The entertainment will be several hours in length. People will not be seated after the program once begins. It is scheduled to begin at 7:30 p. m.

The distinguished cast of entertainers are being flown from Hollywood and New York especially for this program and will leave St. Louis immediately thereafter.

The program will include:

Bob Hawk, Master of Ceremonies and Quizmaster, and *Vaughn Monroe* and his orchestra from New York.

Red Foley, *Minnie Pearl* and *Rod Brasfield* from Nashville, Tenn.

Jimmy Durante and *Allan Young* from Hollywood, Calif.

THE SCIENTIFIC EXHIBIT

The Scientific Exhibit will be located in the Main Exhibition Hall of Kiel Auditorium (St. Louis Public Auditorium), adjacent to the general registration desks, the technical exhibit and the clinical presentations.

Exhibits pertaining to the clinical presentations will be grouped in front of each of the clinical rooms.

The Scientific Exhibit will open Tuesday noon, November 30, and will close at 12:00 noon, Friday, December 3.

Committee on Scientific Exhibit.

DWIGHT H. MURRAY, Chairman

E. J. McCORMICK

GUNNAR GUNDERSEN

MORRIS FISHBLIN, ex officio

GEORGE F. LULL, ex officio

THOMAS G. HULL, Director

IRENE A. KOENEKE, V. E. CHESKY, G. A. WESTFALL, L. E. PECKENSCHNEIDER and THOMAS L. FOSTER, The Hertzler Research Foundation, Halstead, Kan.:

Conservative Pelvic Surgery in the Female: Moulages show circulation of the female pelvis and maintenance of this circulation in conservative operations on the uterus and ovaries. The relation of genital and urinary problems is presented, based on the symptoms and observations in 1,000 cystoscopic examinations on the female. The effect of castration and the accompanying psychiatric problems are depicted.

LEO J. HARTNETT, St. Louis University School of Medicine, St. Louis:

Arterial Visualization of the Placental Site: Aortography offers a method of directly visualizing the maternal circulation over the placental site. This exhibit demonstrates the placental location through the use of roentgenograms. The entire operative procedure is shown by posters, including indications, contraindications and complications. Roentgen evidence of some complications is shown also.

NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC., New York, with the assistance of the Georgia Warm Springs Foundation, Warm Springs, Ga.:

Treatment of Poliomyelitis: The seven stages of treatment of poliomyelitis are shown: (1) save patient's life, (2) prepare for motion, (3) coordinate function and increase strength, (4) increase functional activity, (5) evaluate functional capacity, (6) return home and (7) orthopedic surgery and assistive appliances. Clinical demonstrations will be carried on in an area adjoining the exhibit.

PAUL F. FLETCHER, St. Louis University School of Medicine, St. Louis:

Abdominal Colpo-Cystopexy for Complete Prolapse of Vagina, Bladder and Uterus—Rectus Suspension Principle of Crossed-Suspender Support: The exhibit presents the rectus suspension principle of operative treatment for complete prolapse of the bladder and vagina following hysterectomy and for selected cases of complete uterine procidentia. Living fascial strips mobilized from the anterior rectus sheaths are employed in such a manner as to effect permanent restoration of normal anatomic relationships of these viscera in the pelvis. Analysis of results obtained in both types of cases based on follow-up observations for periods of two to eight years are included.

HUGH L. C. WILKERSON, MALCOLM J. FORD and DONALD HARTING, U. S. Public Health Service, Diabetes Section, Boston:

Simplified Case Finding in Diabetes Control: New developments in diabetes case finding are presented, with a new rapid screening blood glucose test. Blood sugar values on 2,000 "normal" persons from Brookline, Mass., are shown, and the relation to time elapsed since the last meal is indicated. A study of the incidence of diabetes in relatives of a known group of diabetic persons in Jacksonville, Fla., is presented. Physicians

are invited to have screening blood glucose tests or they may actually perform the tests themselves.

HOWARD F. ROOT, ELLIOTT P. JOSLIN, PRISCILLA WHITE, ALEXANDER MARBLE, ALLEN P. JOSLIN and HERBERT H. MARKS, George F. Baker Clinic, New England Deaconess Hospital and Metropolitan Life Insurance Company, Boston and New York:

Diabetes Mellitus in Camp, Home and Hospital: Placards present information about new diabetes camps for children, treatment of diabetes complicated by pregnancy, coma and surgical treatment and new data on factors influencing mortality rates.

HUGH L. C. WILKERSON, Diabetes Section, U. S. Public Health Service, JOSEPH H. BARACH and FRANK N. ALLAN, Boston and B. Y. GLASSBERG, St. Louis, American Diabetes Association:

Diabetes in the United States: The activities of the American Diabetes Association in helping physicians and patients to meet the problems of diabetes are presented. The results of the diabetes program of the U. S. Public Health Service are demonstrated, with statistics on the incidence of diabetes as revealed by the case finding study in Oxford, Mass.

WILLIAM S. COLLENS, NATHAN D. WILENSKY, LOUIS C. BOAS, JAMES D. ZILINSKY and JEROME J. GREENWALD, Maimonides Hospital, Brooklyn:

Complications of Diabetes Mellitus: The exhibit consists of color prints and charts depicting the following complications of diabetes mellitus; insulin lipoatrophy, lipohypertrophy, peripheral neuropathy, Kimmelstiel-Wilson syndrome, acute arterial thrombosis, varieties of gangrene, xanthromatoses and vitamin deficiency states. The diagnostic and therapeutic aspects of these conditions are stressed.

DONALD F. HILL, W. PAUL HOLBROOK, CHARLES A. L. STEPHENS JR., LEO J. KENT and EDNA MCCARTHY, Tucson, Ariz.:

Treatment of Rheumatoid Arthritis: The treatment of rheumatoid arthritis is presented with basic outline, optional, doubtful and worthless methods. Emphasis is given to prevention and correction of deformity with pictures, roentgenograms, charts and demonstrations. Special attention to knee contractions and correction with manipulation in approximately 70 cases is included.

R. S. HENCH, R. K. GHORMLEY and E. F. ROSENBERG,* Mayo Clinic, Rochester, Minn.:

Types of Rheumatic Diseases: The exhibit presents a summary of the pathologic features together with characteristic clinical and roentgenologic changes of the commoner rheumatic diseases, such as rheumatoid arthritis, gout, gonorrheal and other specific arthritides, fibrositis, hypertrophic arthritis, Heberden's nodes, Charcot's joints, tuberculous arthritis and osteochondromatosis. Each type of disease is illustrated by means of clinical photographs, roentgenograms, histologic preparations and moulages.

HOWARD F. POLLEY and DONALD J. ERICKSON, Mayo Clinic, Rochester, Minn.:

Physical Medicine in Arthritis: This exhibit deals with the employment of physical procedures for rehabilitation of persons having arthritis.

WILLIS E. BROWN, OTTO F. KRAUSHAAR and J. T. BRADBURY, State University of Iowa, Iowa City:

Cytology in the Detection of Cancer—Results of a Survey in 4,000 Women Over 30 Years of Age: The exhibit contains six panels of transilluminated Kodachrome photomicrographs of normal and cancer cells in smears stained by the Papanicolaou

* Fellow in Medicine at the Mayo Foundation from Oct. 1, 1935 to June 1, 1942.

technic. In addition to adenocarcinomas and epidermoid carcinomas of the cervix and uterus, examples of pulmonary and renal malignant growths are also included. The summary of a survey of about 4,000 vaginal smears is presented in graphic form. It is presented to show the correlation of cytologic observations with those of biopsy specimens and clinical examinations.

CHARLES F. SHERWIN, St. Louis University School of Medicine, St. Louis:

Tumor of the Face and Eyelids: Photographs and transparencies of various common and unusual tumors and allied conditions noted about the face and eyelids with notations as to treatments and after-results. Special emphasis will be given to types of lesions that could easily be managed by the general practitioner who does a moderate amount of surgical work.

CHARLES F. SHERWIN and ASSOCIATES, Cancer Control Committee, St. Louis University School of Medicine, St. Louis:

Typical 5-Year Survivors of Histologically Proven Cancer—Illustrative Case Reports: Seven case histories are given, together with photographs and photomicrographs as follows:

Case 1.—*Melanoma of Conjunctiva with Preauricular Metastases:* EDWIN J. CASEY, LEGRAND D. SPENCER and CHARLES F. SHERWIN.

Case 2.—*Carcinoma of Cervix Uteri.* W. VOGT Sr. and LEROY SANTI.

Case 3.—*Carcinoma of Skin About Ear.* CHARLES F. SHERWIN.

Case 4.—*Carcinoma of the Rectum.* W. K. MCINTYRE and R. J. MCGANN.

Case 5.—*Carcinoma of the Stomach.* L. RASSIEUR and L. T. MOORE.

Case 6.—*Carcinoma of the Lower Lip.* G. V. STRYKER.

Case 7.—*Carcinoma of the Breast.* W. E. LEIGHTON, L. T. MOORE and J. ERNEST JENSEN.

EDWIN C. ERNST, Barnard Free Skin and Cancer and DePaul Hospitals, St. Louis:

Improved Radium Technic in the Treatment of Carcinoma of the Cervix—Preliminary Clinical Results Compared and Analyzed: The advantages of uniform distribution of multiple sources of radium in the treatment of carcinoma of the cervix are illustrated by means of Kodachrome reproductions of actual cervical lesions during various stages of treatment and variable dosages. Recently developed radium measurement charts and graphs further illustrate the need for improved distribution and more accurate dosage application methods. The clinical application of various radium methods is illustrated and the respective clinical results shown on Kodachrome photographs before and after radium therapy procedures.

STANLEY E. LAWTON, CHARLES E. FILDES, LEON SEIDMAN and ROBERT SCHIREK, University of Illinois College of Medicine and Hines Hospital, Chicago:

Cancer of the Stomach: The exhibit emphasizes the extreme importance of early diagnosis and early treatment of carcinoma of the stomach. It depicts by use of charts, drawings, roentgenograms and pathologic specimens the results of a study of 1,004 cases admitted from many different states. Difficulties of early diagnosis are pointed out and methods evaluated, and the great responsibility for employment of every possible diagnostic means by the first physician who sees the patient is stressed.

FREDERICK H. FALLS, University of Illinois College of Medicine and CHARLOTTE S. HOLT, Illinois State Department of Public Health, Chicago:

Carcinoma of the Uterus: Charts, models, drawings and graphs depict carcinoma of the cervix and body of the uterus. Particular emphasis is placed on the pathologic aspects, gross and microscopic, and on the associated pathologic aspects. Etiologic factors are pointed out and diagnostic procedures for the

detection of early carcinoma are described. Methods of treatment are shown, together with statements concerning the results of such treatment.

NATIONAL CANCER INSTITUTE, Bethesda, Md.:

Environmental Cancer: The exhibit includes a four unit display showing causes and control of environmental cancer. (1) Some Causes of Cancer Are Known—a diagrammatic section through the human body, showing 11 organs and 7 carcinogenic factors affecting them and four routes of exposures. (2) Varied Aspects of Environmental Cancer—including radioactive substances and x-rays as variation by type of contact; hydrocarbons as variation by occupation and solar rays as variation by level of intensity. (3) Case History: Aromatic Amines in a Dye Plant—showing factory with carcinogenic focus and figurines in plastic, showing percentage of cancer in carcinogenic operation, department, plant, county and state and (4) Control of Environmental Cancer—illustrating six control factors of environmental cancer.

EVARTS A. GRAHAM, THOMAS H. BURFORD and LAUREN A. ACKERMAN, Washington University School of Medicine, St. Louis:

Bronchiogenic Carcinoma: The exhibit illustrates frequency and types of bronchiogenic carcinoma. Methods used in diagnosis and treatment are shown and modern results are indicated.

A. C. CHRISTIE, FRED O. COE, A. O. HAMPTON and GEORGE M. WYATT, Washington, D. C.:

Rectal Bleeding—Polyps and Early Carcinoma of the Colon: The exhibit shows that (1) the discovery of polyps of the colon is dependent on proctoscopy, sigmoidoscopy and roentgen examination; (2) bleeding from the bowel even as a single episode may indicate the presence of a polyp or carcinoma and must be explained; (3) the barium sulfate enema examination necessary to disclose the cause of bleeding from the bowel must be carried out with painstaking thoroughness. The following steps are necessary: (a) fluoroscopy with palpitation and preevacuation roentgenograms, (b) compression spot roentgenograms of suspected area, (c) the addition of tannic acid to the barium sulfate enema (2 per cent by weight in the water), (d) good postevacuation roentgenograms to show mucosal relief of the contracted colon and (e) repetition of an unproductive examination must be done until the origin of bleeding is demonstrated or the normal anatomy of the entire colon is shown. A polyp removed is a cancer prevented.

LOUIS H. JORSTAD and EMMETT B. DRESCHER, St. Louis:

Diagnosis and Treatment of Cancer of the Head and Neck Region: Photographs emphasize the diagnostic features of cancer as it occurs in the head and neck region, with emphasis as to form of treatment and follow-up results. Particular regions emphasized are eyelids, ears, nose, lip, buccal mucosa and tongue.

JAMES BARRETT BROWN, FRANK McDOWELL and MINOT P. FRYER, Washington University School of Medicine, St. Louis:

Neck Dissection for Metastatic Carcinoma: Colored illustrations of the operation for complete neck dissection are shown with explanatory charts.

E. LAWRENCE KEYES and HENRY PINKERTON, St. Louis University, Cancer Control Program, St. Louis:

Three Unusual Tumors of Clinico-Pathologic Interest—A. Lymphangitic Carcinoma of Lung; B. Plasmocytoma of Thyroid; C. Chordoma of Sella Turcica: The exhibit presents the clinical, radiologic and pathologic aspects of 3 recent cases, chosen for their general interest. In addition to the visual presentation, a brief discussion of each tumor will be given and the prognosis and treatment outlined.

J. WILLIAM THOMPSON and E. L. MILOSLAVICH, DePaul Hospital, St. Louis:

Surgical Pathology—Gastrointestinal Tract: The exhibit consists of gross specimens of malignant lesions of the gastro-

intestinal tract, surgically removed, mounted and prepared by an original method using a colored background with indirect illumination.

AMERICAN CANCER SOCIETY, Missouri Division, Jefferson City, Mo.:

Public Education in Cancer—How Your Doctor Detects Cancer: The central theme of the exhibit demonstrates how the practicing physician detects cancer by the employment of the senses of the sight, hearing and touch. One section of the exhibit will emphasize the three methods of treating cancer—with roentgen ray, operation and radium. One panel is devoted to the hope of cure.

BREWSTER S. MILLER, American Cancer Society, Inc., New York:

Professional Education in Cancer: Illustrations depict many of the activities of the professional education section of the American Cancer Society, including the Society's new journal, *Cancer*, illustrated lantern slide library, lending library of professional films, the Society's exhibit program and fellowship program, monographs on the early recognition of cancer of various sites, a new film illustrating the general practitioner's responsibility and opportunities in cancer control, the Society's participation in various medical meetings and the library's function in professional education, as current literature, cancer bibliography and topical bibliographies.

ALBERT KUNTZ, WILLIAM F. ALEXANDER, CALVIN A. RICHINS, NORMAN M. SULKIN and WILLIAM P. HENDERSON, St. Louis University School of Medicine, St. Louis:

Autonomic Nervous System: The exhibit is divided into three parts: (A) The anatomic relationships of the sympathetic trunks and the communicating rami are illustrated by drawings made from dissections of human cadavers and in anatomic preparations. The significance of certain normal anatomic relationships and some common variations in relation to sympathectomy is pointed out. (B) The responses of the smaller blood vessels in the intestine and other viscera to localized warm and cold stimulation of the skin are illustrated as observed in sections prepared by the freeze-dry technic. The cutaneous visceral reflex arcs concerned in these responses are illustrated diagrammatically. (C) The histologic structure of the autonomic ganglia is illustrated in photomicrographs with particular reference to the neuroglial supporting tissue. Individual ganglion cells are illustrated photomicrographically to show the chromidial substance, the Golgi apparatus, the ascorbic acid content, etc.

VERONICA L. CONLEY, Joint Committee on Cosmetics, American Medical Association, Chicago:

Cosmetic Dermatitis: The exhibit presents common causative agents, diagnostic aids, treatment and prognosis in cosmetic dermatitis. Illustrations consist of transparencies and photographs depicting dermatoses acquired from various cosmetics.

CLEVELAND J. WHITE, CHARLES S. GILBERT and FRED R. SCHWARTZ, Stritch School of Medicine of Loyola University, Chicago:

The Positive Wassermann—Its Clinical Interpretation: A positive Wassermann reaction may mean clinical syphilis. It may confirm the diagnosis of suspected syphilis. At least forty-two other diseases, both dermatologic and internal syndromes, may present a positive serologic reaction. Charts, drawings and posters show exactly how such a reaction can be definitely clinically interpreted.

MORRIS MOORE, The Barnard Free Skin and Cancer Hospital, St. Louis:

Mycotic Infections: The exhibit presents a clinical and mycologic classification of the pathogenic fungi of man. Clinical photographs and photomicrographs illustrate both the infections in man, the appearance of the causative fungi in their parasitic state and the pathologic processes that they induce. Charts show the relationships in a schematic arrangement of the various

mycoses. Cultures of the fungi in Petri dishes demonstrate their appearance in a saprophytic state; Kodachromes of some of the cultures and histopathologic sections are shown.

LESTER M. MORRISON, College of Medical Evangelists, Los Angeles County General Hospital, Los Angeles:

Alcohol and the Liver—Effects and Treatment: The results of eight years' investigation of the clinical and pathologic changes in the liver resulting from an abnormal intake of ethyl alcohol are presented. Histologic changes in the liver, as secured by punch biopsy before and after treatment, are shown. The results of treatment by various new lipotropic agents, such as a new choline carbonate, a new liver extract and high protein diet, are shown. The various forms and stages of the liver damaged by alcohol are described, with particular reference to therapy and prognosis.

PAUL N. HARRIS and K. K. CHEN, Lilly Research Laboratories, Eli Lilly and Company, Indianapolis:

Experimental Liver Injury: Photomicrographs illustrate liver injury produced by: (1) *p*-dimethylaminoazobenzene, a carcinogen, (2) a group of fourteen pure alkaloids derived from plants of the genera *Senecio*, *Heliotropium* and *Crotalaria* and (3) a miscellaneous group of agents, including seeds of *Amsinkia horizontalis*, tannic acid, carbon tetrachloride, diethylene glycol and a high cystine diet.

JAMES F. KELLY, D. ARNOLD DOWELL, JOHN E. DOWNING and JAMES F. KELLY JR., Creighton University School of Medicine, Omaha:

Roentgen Rays in Prevention and Treatment of Infections—A Fifty Year Review: Considerable experimental and clinical evidence has accumulated in the past fifty years on the use of roentgen rays in prevention and treatment of infections. The old concept of heavy dosage, such as used in treating malignant conditions, has been universally discarded in favor of lower voltage and lower dose therapy in treating infections. It is now recognized that therapy of inflammations and the therapy of tumors are two entirely different procedures. Observations of many workers who assisted in establishing these facts will be presented. Roentgen rays in infections have definitely passed from the theoretical to the practical stage.

WM. A. KNIGHT JR., R. O. MUETHER and ANNE SOMMER, St. Louis University School of Medicine, St. Louis:

Pancreatitis—Clinical and Diagnostic Studies: A graphic analysis of study of various types of pancreatic disturbance, including the result of the prostigmine diastase test.

R. O. MUETHER, WM. A. KNIGHT JR. and VICENTE MORALES, St. Louis University School of Medicine, St. Louis:

Liver Biopsy—Diagnostic Aid in Liver Disease: Pictorial demonstration of results of liver biopsy in inflammatory metabolic and neoplastic disease of the liver, using Kodachrome slides and charts.

KARL A. MEYER, DONALD D. KOZOLL, WILLIAM S. HOFFMAN, FREDERICK STEIGMANN and HANS POPPER, Hektoen Institute for Medical Research of the Cook County Hospital, Chicago:

Amino Acids in Clinical Medicine: The value of specially processed proteins and of amino acid preparations in the treatment of conditions accompanied with protein deficiencies will be demonstrated, both by the results obtained from clinical observations and those of laboratory studies. The role of specific amino acids in enhancing the biologic value of natural protein and in combating specific deficiencies will be explained. The etiologic and pathogenetic mechanism of protein deficiency in renal, hepatic and various surgical diseases will be discussed, as will the therapeutic indications of amino acids. The exhibit will describe methods for the biologic evaluation of protein preparations in animal and human subjects, and it will deal with the principles involved in the practical application of amino acid therapy.

ST. LOUIS PATHOLOGICAL SOCIETY, St. Louis:

Laboratory Demonstrations: A complete laboratory will be installed for blood sugar, blood urea and many other laboratory examinations, where physicians may have their own blood tested. Blood cell counts and blood staining will be demonstrated, and microscopes will be available to show various blood dyscrasias. Emphasis will be placed on the fact that the laboratory is not a substitute for case history and physical examinations, but rather an aid in differential diagnosis.

EDWARD M. GUNN, JOSEPH E. SMADEL, THEODORE E. WOODWARD, LIEUT. HURBERT L. LEY JR., CORNELIUS B. PHILIP, ROBERT TRAUB and ELIZABETH JACKSON, United States Army, Washington, D. C.:

Therapeutic Evaluation of Chloromycetin: The display features the therapeutic evaluation of chloromycetin on typhus and scrub typhus, depicting the method of treatment and the effect obtained.

JAMES A. WHEELER, Axtell Clinic, Newton, Kan.:

Encephalomyelitis Virus—Comparative Study of Western Equine Virus and St. Louis Virus: A comparative study is presented of western equine virus and St. Louis virus. This exhibit shows the reservoir as found in two separate studies (J. A. Wheeler; R. J. Blattner and J. V. Cooke) and the vector transmission of the two virus diseases. The object of this exhibit is to show the interesting comparison of the findings of two separate studies, in which two different vectors were involved with the transmission of each virus disease from sources found in nature. In western equine virus it was found that 50 per cent of assassin bugs from rats' nests in pastures contained virulent western equine virus, and the present theory is that the young assassin bugs gain their wings in the spring and fly to horses in the pasture. With the proper influx of seasonal mosquitoes the stage was set for an epidemic, which was found in 1941 to involve 50 per cent of the cases of blood samples in which a serum neutralization test was made for western virus.

COL. JOHN R. WOOD, M.C. and STANLEY H. DURLACHER, Medical Division, Army Chemical Center, Maryland:

BAL in Heavy Metal Poisoning: The exhibit shows the effect of BAL in heavy metal poisoning.

HILGER PERRY JENKINS, DAVID S. FOX, RUDOLPH W. JANDA and DOUGLAS PACKARD, University of Illinois College of Medicine and Woodlawn Hospital, Chicago:

Intestinal Intubation: The indications for intubation for relief of intestinal distention are presented by roentgenographic studies of illustrative cases. The mechanical details which are necessary for the successful use of the Miller-Abbott tube are demonstrated with the aid of a manikin. The hazards and limitations of intubation are pointed out. Cases are reviewed in which the Miller-Abbott tube was used to obtain decompression of the distended small intestine due to obstruction or paralytic ileus, thus obviating surgical treatment or permitting operation in more favorable circumstances. Although intestinal intubation is a standard procedure in many of the larger hospitals, there are still many communities where this type of service is not yet available.

LIBRARY, Washington University School of Medicine, St. Louis:

Manuscripts and Letters of William Beaumont, Pioneer American Physiologist: A collection of manuscripts and letters of Dr. William Beaumont, containing his account of the gunshot wound of Alexis St. Martin, which enabled Beaumont to study the processes of digestion, is exhibited. These studies led to the publication of Beaumont's famous book, "Experiments and Observations on the Gastric Juice and the Physiology of Digestion," 1833, and copies of the various editions are shown. Photographs and biographic material about Beaumont, such as notebooks, diaries and case books, are exhibited also.

OLIVER FIELD, Bureau of Investigation, American Medical Association, Chicago:

Mechanical Quackery: The exhibit shows various weird mechanical devices that have been foisted on the public for the cure of human ills. Among other items shown are Radioclast, Goetherator, Perkins' Tractors, Ghadiali Spectro-chrome, Radium or Vrilium Tube, Radiendocrinator, Radium Pad, Geo-Radium and nose adjusters.

A. RAY DAWSON, Veterans Administration, Washington, D. C.:

Physical Medicine and Rehabilitation in Tuberculosis and Thoracic Surgery: The ultimate goal in the rehabilitation of patients with tuberculosis and other diseases of the chest is not only the physical recovery of these persons but their training for future economic independence. The exhibit will include charts, photographs, slides, motion pictures and apparatus showing the various rehabilitation activities. Patients will also be demonstrated.

A. RAY DAWSON, Veterans Administration, Washington, D. C.:

Evaluation of Physical Capacity of Tuberculous Patients: The exhibit deals with the technic which is employed in physical medicine rehabilitation in the Veterans Administration Tuberculosis Hospitals to measure and evaluate the physical capacity of tuberculous patients, to perform the various tasks which are involved in daily living, such as self-care activities—eating, dressing and bathing, recovery and vocational activities.

SEDGWICK MEAD, Washington University School of Medicine, Department of Occupational Therapy, with the assistance of the Association of Occupational Therapists of Missouri, St. Louis:

Occupational Therapy: The exhibit shows photographs illustrating functions of occupational therapy from the physical aspect, psychosocial aspect and prevocational aspect.

HOWARD A. RUSK, GEORGE G. DEEVER and DONALD A. COVALT, New York University College of Medicine, New York:

Rehabilitation in Hemiplegia: The exhibit shows methods and devices for the late rehabilitation of patients with hemiplegia. Patients will be used in the demonstrations.

MILDRED ELSON and BARBARA WHITE, American Physical Therapy Association, New York:

Physical Therapy: The purpose of the exhibit is to acquaint the general practitioner with physical therapy and its use in providing complete care in various types of cases. The exhibit illustrates physical therapy as an essential part of good medical care and physical therapy procedures in the later stages of physical rehabilitation. A variety of cases for which physical therapy is prescribed and many of the different procedures used in physical therapy are shown.

HOWARD A. CARTER, Council on Physical Medicine, Committee on American Health Resorts, American Medical Association, Chicago:

American Health Resorts: The exhibit presents information concerning health resorts in the United States. Charts explain the aims and purposes of the Committee on American Health Resorts.

W. OLIVER KINCANNON, Federal Security Agency, Office of Vocational Rehabilitation, Washington, D. C.:

Vocational Rehabilitation for Civilians: The exhibit includes an outline of the vocational rehabilitation services available to disabled persons through a nationwide federal-state partnership program, with emphasis on the services of physical restoration.

JACOB J. WEINSTEIN, George Washington University School of Medicine and Gallinger Memorial Hospital, Washington, D. C.:

Parenteral Proteins in Surgery: The exhibit shows (1) the indications for parenteral proteins in both surgical and medical

cases; (2) tolerance studies with parenteral protein hydrolysate by intravenous, subcutaneous and intramuscular routes; (3) the physiologic and histologic alterations associated with protein deficiencies; (4) postoperative blood deficiency in various surgical procedures, with particular reference to the nitrogen loss and the particular references of its effect on the blood proteins and hemoglobin; (5) clinical results, showing the effects of protein hydrolysate in various surgical procedures on patients who have received protein therapy; (6) toxicities, describing reactions for the entire study, and (7) program for parenteral feeding with various types of surgical procedures.

ROBERT W. BARTLETT, Washington University School of Medicine, St. Louis:

The Surgical Management of Large Goiters: The exhibit shows photographs of patients before and after operation, the removed specimens and roentgenograms showing the pronounced tracheal distortion that occurs with certain large goiters and drawings detailing the technic of the operation providing the maximum exposure for removal of such growths with safety. Technical points of the operation and the type of anesthesia required are included.

GRAHAM ASHER, LAWRENCE STEFFEN and FRANKLIN D. MURPHY, University of Kansas School of Medicine, Kansas City, Kan.:

Latent or Subclinical Tetany—A Clinical Study of Its Presence in Cardiovascular Diseases: The exhibit shows descriptive charts of clinical features and symptoms, clinical charts of cases of latent tetany, illustrations and photographs of abnormal muscle responses. Descriptive leaflets of the exhibit, with the theoretical considerations, will be available.

LAURENCE F. GREENE, Mayo Clinic, Rochester, Minn.:

Urinary Incontinence in Females Due to Ectopic Ureters: Urinary incontinence occurs in females as a result of ectopic ureters. In this condition the ureter, instead of entering the bladder, opens into the urethra or the vestibule of the vagina and results in a constant uncontrollable escape of urine. This distressing anomaly can be easily recognized and completely cured by proper surgical procedures. The exhibit will include illustrative roentgenograms and a diagrammatic model.

ROBERT DEAN WOOLSEY, St. Louis University School of Medicine, St. Louis:

Thoracolumbar Sympathectomy for Essential Hypertension: Drawings show the operative procedure, and charts present the results of the operation.

FRED Z. HAVENS, Mayo Clinic, Rochester, Minn.:

Hypospadias—Surgical Correction: The exhibit shows by models, photographs and drawings (1) the various types and degrees of hypospadias and (2) the technic of the surgical treatment of this deformity by (a) the use of Edmund's operation for correction of the chordee and (b) the use of the inlying tubular graft for reconstruction of the missing portion of the urethra. A statistical analysis of the results in 80 cases in which operation was performed in the last five years will be presented.

WILLIAM J. ATKINSON JR., St. Louis University Medical School and St. Louis University Medical Service, St. Louis City Hospital, St. Louis:

Tetraethylammonium Chloride in the Treatment of Angina Pectoris: The exhibit presents charts and diagrams summarizing results obtained in treating 27 patients with angina pectoris with tetraethylammonium chloride. Twenty-four of these showed symptomatic improvement. Seventeen of the patients were treated for long periods (varying from six to fifteen months) with no harmful effects. Especially gratifying results are noted in long-continuing pain associated with coronary insufficiency and not relieved by glyceryl trinitrate. Judging correct dosage individually in each case is emphasized. An outline of the known cardiovascular pharmacologic aspects and other possible mechanisms of action is presented.

ALBERT E. GOLDSTEIN, Sinai Hospital and University of Maryland School of Medicine, Baltimore:

Studies in Polycystic Renal Disease: A comparative study was made of operative and nonoperative cases of polycystic renal degeneration. It is shown that in cases of polycystic kidney which are operated on there is a longer duration of life with complete relief of symptoms. The author's procedure is prescribed.

W. F. MELICK, D. G. GNOSE and J. F. MACKEY, St. Louis University School of Medicine, St. Louis:

Experimental Uses of Translumbar Aortography: The exhibit shows has relief photographic copies of aortograms done pre-operatively and postoperatively on hypertensive patients. Perirenal air studies and aortograms on case of hypertension due to adrenal adenoma are presented with case histories.

HUGH A. SCHROEDER, D. F. DAVIES, M. L. GOLDMAN, J. A. NUTZEL, N. S. OLSEN and A. H. WILLIAMS, Washington University School of Medicine, St. Louis:

Pathogenesis of Arterial Hypertension: The pathogenesis of arterial hypertension is indicated by the interaction of the various factors involved. These are the psychogenic, the neurogenic, the renal, the humoral and the effects of hypertension on blood vessels. Experimental work dealing with these factors will be shown. The effect of special diets and other measures in raising or lowering blood pressure will be demonstrated.

WILLARD BARTLETT JR., St. Louis University School of Medicine, St. Louis:

Clinical Research in Abdominal Surgery: The exhibit presents (1) text and charts setting forth the clinical course of a patient with severe streptococcal peritonitis, plus (a) the components of intake and output and pertinent data of his blood chemistry during a ten day period of parenteral feeding, (b) comment on the principles governing parenteral nutrition and maintenance of hemodynamics and (c) how the pitfalls of dehydration and edema may be avoided; (2) the quantitative estimate of gastrointestinal derangement in ileus of whatever origin and the characteristic differences in volumes recovered by nasal catheter suction in (a) mechanical obstruction, (b) peritonitis and (c) with protein depletion alone, and (3) the anatomic and physiologic reasons for weight reduction prior to the operative repair of large incisional hernia, outline of points of technic and preoperative and postoperative photographs.

GORDON M. SCHOEFFLE, Washington University School of Medicine, St. Louis:

A Student Experiment in Nerve Physiology: The exhibit shows a nerve chamber with adjustable silver electrodes, amplifier and cathode ray oscilloscope with appropriate synchronizing circuits to record single impulses in response to short shock electrical stimulation. Movable jack plugs allow the observer to vary conduction distance of the impulse and to adjust the interval between two shocks and thus determine excitability curves. Dials are "fool proof" in that neither machinery nor observer will suffer harm. This is the device actually employed by the students in the laboratory.

GARRETT PIPKIN and H. H. VIRDEN, St. Joseph Hospital, Kansas City, Mo.:

Indefinite Knee Symptoms Resembling Injured Cartilages: The exhibit illustrates the variations in anatomy of the suprapatellar pouch caused by the communication of the suprapatellar pouch with the knee joint. It is normal for a suprapatellar plica (fold) to occur in the synovia. This fold may become fibrosed, hyalinized or calcified and cause symptoms simulating closely a disturbance of the semilunar cartilage.

ANTHONY M. BARONE, Chicago:

Varicose Veins and Venous Thrombosis of the Lower Extremity: The exhibit includes the etiology, diagnosis, complications, sequela, differentiation of ulcers, various tests and

treatments and an analysis of 1,000 cases of varicose veins. The differentiation, diagnosis and various treatments of venous thrombosis are given, including case reports.

WILLIAM MILTON ADAMS, Memphis, Tenn.:

Free Composite Grafts of the Nipples in Mammary Plasty: The exhibit shows pictures of cases before and after operation, as well as pictures and drawings illustrating the operation.

MERL CARSON and DOROTHY RINDERER, Washington University School of Medicine, St. Louis:

Postgraduate Medical Studies: The exhibit portrays the postgraduate activities of the Washington University School of Medicine. It consists mainly of posters, charts and photographs depicting various types of activities in the postgraduate school. The various types of classes that are offered during the year are represented so that the practitioner will have a definite idea as to the courses of study available.

A. C. STUTSMAN, Washington University School of Medicine, St. Louis:

Foreign Bodies of the Tracheal Bronchial Tree and Esophagus: The exhibit of roentgenograms shows the various changes produced by nonopaque bodies in the tracheal bronchial tree. Foreign bodies of the upper portion of the esophagus are presented.

GUERDAN HARDY, Washington University School of Medicine and St. Louis County Hospital, St. Louis:

Fractures of the Zygomatic (Malar) Bone—Diagnosis and Treatment: The exhibit includes charts showing causes of malar fractures, the diagnosis and associated injuries; photographs and roentgenograms of patients, and drawings showing proper approaches in both simple depression and comminuted fractures.

WILLIAM B. KOUNTZ, ESDEN KIRK, PHILLIP ACKERMAN, LILLI HOFSTETTER and MARGARET CHIEFFI, Washington University School of Medicine and St. Louis City Infirmary Hospital, St. Louis:

Changes in Man Associated with Age: The exhibit shows an evaluation from a physiologic and anatomic point of view of changes associated with age in man. Studies are presented which indicate that there is considerable variance in the functions of the young contrasted with the old. Attempts at modification of some of the functions are made by the administration of hormones, food substances and vitamins.

JAMES F. DOWD, St. Louis University School of Medicine, St. Louis:

Technic of Rhinoplasty: The exhibit presents the basic rhinoplastic technic as used by the author. A series of drawings depict the essential steps as they are done in the average case. Four sets of preoperative and postoperative photographs will be used to show the results obtained on four common types of nasal deformities. These will include the large dorsal hump, the large bulbous tip, the saddle nose and the traumatic deformity in which the nose is displaced beyond midline.

MOTION PICTURES

Motion pictures will be shown in the clinical presentation rooms adjoining the Scientific Exhibit. The following films will be shown daily from 12:15 to 3:15 p. m.:

UNITED STATES NAVY, Bureau of Medicine and Surgery, Washington, D. C.:

Clinical Malaria: The relationship of the life cycle of the malarial parasite in the blood stream to the patient's clinical symptoms is clearly shown by actual photography and animation. Three common types of infection (benign tertian, quartan and malignant tertian) are discussed. Sound, thirty minutes.

HARRISON L. McLAUGHLIN, New York:

An Introduction to Fractures: An introduction to the subject of fractures in a general way. Sound, thirty minutes.

J. HORVATH, University of Erlangen, Erlangen:

Ultra Sound in Medicine: This film represents pioneer work in exploring the possibilities of ultra sound in medicine. Methods for generating vibrations too fast for hearing are shown, revealing the curious physical effects of such vibrations, particularly on liquids and certain biologic effects followed by the technical problems to be solved before therapeutic applications are mentioned, including preliminary results with microscopic findings. Silent, twenty-five minutes.

MILTON MCCALL and ARTHUR FIRST, Jefferson Medical College, Philadelphia:

Cesarean Section—Norton Paravesical Extraperitoneal Technic: A motion picture depicting the paravesical technic of Norton. This type of extraperitoneal cesarean section has proved safe even in cases of the most profound infection. The use of the technic obviates the sacrifice of the uterus by cesarean hysterectomy and makes difficult embryotomy unnecessary. An actually infected patient was used in making this film. Silent, fifteen minutes.

LESTER R. DRAGSTEDT, University of Chicago, Chicago:

Supradiaphragmatic Gastric Vagotomy for Peptic Ulcer—The Abdominal Approach: Technic of gastric vagotomy by the abdominal approach with illustrations of the anatomy of the vagus nerve. Silent, twenty minutes.

DONALD F. HILL, W. PAUL HOLBROOK, CHARLES A. L. STEPHENS JR., LEO J. KENT and EDNA MCCARTHY, Tucson, Ariz.:

Rheumatoid Arthritis: The method of preventing deformities and correcting deformities in rheumatoid arthritis, including end results in a number of patients, is depicted in this film. Silent, seventeen minutes.

LOUIS E. MOON and J. B. CHRISTENSEN, Creighton University School of Medicine, Omaha, Neb.:

An Improved Technic for the Operative Treatment of Anorectal Lesions: Simple, practical and successful methods of making proctologic examination are presented and operative procedures for the treatment of common anorectal lesions demonstrated. A routine proctologic examination is shown, with animated anatomic illustrations reviewing the anatomy of the region followed by closeup shots of the examination in actual cases. A simple ligature type of operation for removal of internal and external hemorrhoids is shown, as well as operations for anal fissure, abscess and a simple fistula. Silent, forty-four minutes.

UNIVERSITY OF ILLINOIS, Division of Services for Crippled Children; Chicago:

Nursing Care in Poliomyelitis: This motion picture forms a coherent sequence demonstrating the technics used in all stages of poliomyelitis: (a) the acute stage, (b) the stage of spastic muscular activity and pain, (c) the stage of respiratory difficulty in bulbar cases, with details of procedure and patients in the respirator, and (d) the convalescent stage, with details of muscle training and underwater exercises. Sound, sixty-eight minutes.

BRITISH INFORMATION SERVICES:

Polio Diagnosis and Management: In this film, patients are shown illustrating: (1) differential diagnosis of the early stage of poliomyelitis, (2) the probable existence of many undiagnosed atypical forms of the disease, (3) the importance of correcting little unsanitary working habits among housewives, (4) the multiplicity of effects on the nervous system and (5) the necessity of cooperation among various individuals and agencies for restoring the patient to the best possible degree of productivity. Sound, fifty-seven minutes.



The Technical Exposition

INTERIM SESSION

St. Louis, Mo., November 30—December 3, 1948

The primary aim of the Technical Exposition at the Interim Sessions is to show the General Practitioner the most recent developments which industry has produced for the modern practice of medicine.

In addition to broadening your knowledge and technic, the St. Louis Exhibition offers many *new* helps: up to date equipment with numerous applications; first-hand information on testing procedures which you can perform in your own office; the Papanicolaou method of cancer diagnosis; blood sugar screening test, etc. You can learn more about the newer discoveries—antibiotics, amino acid preparations, anti-histaminics, hematinics, hormones, triple-sulfa drugs. Along with the new will also be found the standard and long established products . . . outstanding books of the leading medical publishers . . . modern hearing aids . . . nutritional products . . . infant specialties. Among other interesting and informative features will be televised surgical and clinical methods.

At each booth will be trained men, or women, ready to give useful information and help in solving your workaday problems. They cordially invite you (and so do we) to visit the exhibits whenever possible—before meetings, between meetings, and afterward—to get a clearer picture of current progress in practically every field of medicine. The Municipal Auditorium will be open daily from 8:30 A. M. to 6:00 P. M. beginning Tuesday, November 30 and closing 12:00 noon, Friday, December 3. Brief descriptions of some of the exhibits on this and the following pages will give you further information about what may be seen.

THOS. R. GARDINER, Business Manager and Director
of Technical Exhibits.

ABBOTT LABORATORIES

Booth D-4

Desoxyn Hydrochloride, an effective cerebral stimulant with a wide variety of uses, and Pentothal Sodium, an intravenous anesthetic, will be the featured products exhibit. Abbott comes an opportunity of Desoxyn and the worldwide clinical background of Pentothal Sodium.

A. S. ALOE COMPANY

Booths D-20, D-22

On display here will be a cross section of the complete line of hospital, surgical, and laboratory equipment and supplies carried by the "world's largest surgical supply house" including a large number of specials from their war surplus and regular stocks. By all means, do not miss these money-saving values. If you would like to visit their home office and sales room—only a few blocks from the Auditorium—contact any of their representatives who will be happy to arrange a tour of their home office for you.

AMERICAN HOSPITAL SUPPLY CORP.

Booth A-13

Highlighting the American Hospital Supply exhibit will be Baxter Intravenous Solutions, Blood Transfusion and plasma equipment plus new Baxter disposable accessories for the administration thereof, Blood grouping Serums, and certain selected Tomac specialty products.

AMES COMPANY, INC.

Booth D-15

Ames Company representatives will be glad to discuss Decholin, the standard hydrocholeretic agent for the treatment of biliary tract diseases, and Decholin Sodium, pure sodium dehydrocholate. They will be demonstrating Clintest and Hematest—simplified tests for the detection of urine-sugar and occult blood.

ARMOUR & COMPANY

Booth B-5

Armour Toiletries, a division of Armour and Company, is proud to exhibit at the Second Annual Interim Session of the American Medical Association its Stork Baby Products. These products, accepted for advertising in publications of the American Medical Association, include the famous Stork Castile Soap, a leader in baby's complexion care for 40 years, and the scientifically-safe companion products, Stork Baby Oil and Stork Baby Powder. Conventioneers are invited to see the Stork exhibit in Booth B-5.

THE GORDON ARMSTRONG CO., INC.

Booth C-16

Save a little time to inspect the Armstrong X-4 Baby Incubator. Recently this full length view modern Incubator was awarded the acceptance of the Council on Physical Medicine of the American Medical Association. Added to this, the Armstrong X-4 Baby Incubator has enjoyed for several years, the approval of Underwriters' Lab-

oratories and the Canadian Standards Association. The exhibit will not be for sales, but rather to answer questions and give service on the six thousand Armstrong X-1 Baby Incubators now in use all over the world.

ASSOCIATED MEDICAL CARE PLANS

Booth A-25

Fifty-five Blue Shield Plans are represented in this exhibit. Complete information from experienced personnel will be available at the booth.

Current reports on Blue Shield progress and national activities will be of special interest to those who wish to check on the advancement of medically sponsored nonprofit prepayment plans.

AYERST, McKENNA & HARRISON, LTD.

Booth B-16

Some valuable information on "Premarin" soluble tablets . . . orally-active, conjugated estrogens (equine) may be had here. The potency of "Premarin" is expressed in terms of its principal estrogen, sodium estrone sulfate; and "Premarin" is available in tablets of four potencies and also in liquid form.

BECK-LEE CORPORATION

Booth B-1

Be sure to visit the Beck-Lee exhibit and see the new development in Electrocardiography—an electrocardiograph with an automatic developing camera which completely develops moving photographic paper or film! The entire process including developing, fixing, washing, drying takes place within the camera. The minute electrical currents of the human heart are picked up by the electrocardiograph and recorded on moving photographic paper within the camera. A continuous photographic record of the heart current rolls from the camera until the cardiogram is completed.

MARJORIE BELL CO.

(between D-9 and D-15)

CREME-LACQUER a fascinating hair-dressing by Marjorie Bell that is non-stiffening, non-alcoholic, non-flaking and non-oily after applying to your hair, will attract your attention here! To a patient, the psychological value of boosting morale by having his or her hair nicely groomed with shining, youthful highlights, is immeasurable. To the well person in professional life it gives assured confidence in presenting a well-kept appearance. Be sure to stop by and become acquainted with this unique preparation.

Booth B-7

THE BLAKISTON CO.

Booth D-8

BURNS CURTIS CO.

Booth B-24

BURROUGHS WELLCOME & CO.
(U.S.A.) INC.

Booth D-2

BURTON MANUFACTURING COMPANY

Booth D-10 (a 1/4)

CAMEL CIGARETTES

Booth D-13

CAMERON SURGICAL SPECIALTY COMPANY

Booth C-7

CARNATION COMPANY

Booth D-21

CENTRAL PHARMACAL COMPANY

Booth D-17

CIBA PHARM. PRODUCTS

Booths C-22, C-24

COOPERATIVE MEDICAL ADVERTISING
BUREAU

Booth A-10

C.S.C. PHARMACEUTICALS

Booth D-29

CUTTER LABORATORIES

Booth B-19

DEVEREUX SCHOOLS

Booth D-14

F & J MANUFACTURING CO.

Booth B-28

EDIN ELECTRONICS CO.

Booth B-26

ELECTRONIC SURG. EQUIP. CO., INC.

Booth B-31

ENCYCLOPAEDIA BRITANNICA

Booth C-30 (w 1/2)

FANCEE FREE MFG. CO.

Booth C-18

H. G. FISCHER & CO.

Booth B-36

GERBER PRODUCTS CO.

Booth A-29

GRADWOHL LABORATORIES

Booth C-26

GRUNE & STRATTON, INC.

Booth A-16

Outstanding among the recent publications of GRUNE AND STRATTON are H. A. Davis' SHOCK AND ALLIED FORMS OF FAILURE OF THE CIRCULATION; Kurt GUAG der's

all fields of medical and surgical practice will be available. In addition to American publications, leading British periodicals issued by the B. M. A. will be shown.

HAMILTON-SCHMIDT SURGICAL CO.

Booth D-27

... of Burdick ... a new radar ... and other surgical equipment will spotlight the Hamilton-Schmidt exhibit. Information on the operation of these units will be given to visiting physicians.

HANOVIA CHEMICAL & MFG. CO.

Booth B-12

Some interesting information about an entirely new Wall Type Aero-Kromayer Lamp at a new low price will be heard by visitors here. Representatives will be at your service to present you with all the facts. General body type ultraviolet lamps, Solux Radiant Heat lamps, and Safe-T-Air Models for the destruction of air-borne bacteria will be demonstrated.

THE HARROWER LABORATORY

Booth D-9

The Harrower exhibit will present gastroscopic and acidity control studies relative to Mucotin, a mucin antacid mixture. The exhibit will have three main points of interest: gastric acidity control studies; a case history report of a patient with a gastric ulcer (the ulcer and its response to treatment are illustrated gastroscopically); and gastroscopic pictures showing the coating action of Mucotin.

PAUL B. HOEBER, INC.

Booth A-30

PAUL B. HOEBER, INC., Medical Book Department of Harper & Brothers, Booth A-30, invites you to inspect the entire list of HOEBER publications including these new volumes for the family physician: the new fourth edition of Alvarez' *Introduction to Gastro-Enterology*, Barrow's *Clinical Management of Varicose Veins*, Mengert's *Diagnoses, and Schwedel's of the Heart*. Late journals, *Cancer* and *Psychosomatic Medicine* will also be available. Be sure to visit the Hoerber booth.

HOLLAND-RANTOS CO., INC.

Booth B-18

KOROMEX JELLY and KOROMEX CREAM will be featured at booth B-18. You may recall it was the Holland-Rantos Company, Inc., that pioneered the introduction of modern contraceptive technique—so frequently referred to as the Koromex Method. The clinical use of ... back to 1925. ... tives will be interested physicians the latest data on KOROMEX JELLY and CREAM.

W. S. HORN COMPANY

Booth C-21 (a 1/2)

The Hospital Bedlight Bedpan Commode, a portable device for patients occupying hospital beds, will be on display here. A standard bedpan is used as the vessel and the seat is on a level with the top of the bed. This commode offers to many medical, obstetrical, and surgical patients the comfort and convenience of the natural sitting position with a minimum of effort.

HYGEIA, THE HEALTH MAGAZINE

Booths A-4, A-6

In the HYGEIA booth, you will find a pictorial representation of editorial contributors, the processes of editing, the methods used for screening and approving advertising and the various types of readers who benefit from this health magazine. Also presented is a series of sequence lighted color transparencies showing how HYGEIA'S health information is used by professional, educational, and family groups.

INTERCHEMICAL CORP.

Booth A-38

The Biochemical Division of Interchemical Corporation will display two dosage forms of ... —ELAM ... ELAMIN ... These ... signed for intr. ... e adequate amounts of amino acids for the treatment of hypoproteinemia. They are exceptionally well tolerated. Representatives will be present to discuss amino-acid therapy.

IODINE EDUCATIONAL BUREAU, INC.

Booth A-22

This exhibit will emphasize the place of iodine and its compounds and preparations in the fields of surgery, medicine, and nutrition. Samples of official U. S. P. and N. F. preparations containing iodine and samples of iodine preparations accepted by the Council on Pharmacy and Chemistry of the American Medical Association will be displayed. Representatives of the Bureau will be on hand to offer to those in attendance the Bureau's bibliographic and other services in connection with iodine.

JONES METABOLISM EQUIP. CO.

Booth A-17

All physicians concerned in any way with metabolism work, whether running own tests or referring cases elsewhere, will be interested in inspecting the New Jones SUPER MOTOR BASAL metabolism unit. The additional exclusive features of this scientifically advanced unit enable the technician to obtain fully satisfactory tests on the most extreme cases, in spite of irregularity of breathing or lack of patient cooperation.

JORDAN PUMP COMPANY

Booth B-14

The center of interest at the Jordan exhibit will be a 3½ pound motor driven pump for penicillin Mist, replacing the need of heavy oxygen equipment. A pressure and vacuum pump unit, equipped with a special flutter valve to positively control negative pressure within the head will also be of interest.

LANTEEN MEDICAL LABORATORIES, INC.

Booth A-40

LANTEEN MEDICAL LABORATORIES, INC., cordially invite you to visit their exhibit, Booth A-40. Featured will be their well-known Lanteen Flat Spring Diaphragm. Representatives will be pleased to discuss an improved diaphragm fitting technique.

LEA & FEBIGER

Booth A-28

Lea & Febiger invite you to stop at Booth A-28 and examine their selection of new books and new editions, books on Pathology, Gray—Anatomy of the Human Body; Krause—Therapy of the Neuroses and Psychoses; Quiring—Collateral Circulation; Burch and Winsor—Primer of Electrocardiography; Burch and Reuser—Primer of Cardiology; Ormsby and Montgomery—Diseases of the Skin; Joslin—Diabetic Manual; Frohman—Brief Psychotherapy; Herbut—Surgical Pathology and many other books of practical help and guidance.

LEDERLE LABORATORIES DIVISION (AMERICAN CYANAMID COMPANY)

Booth C-1

Lederle Laboratories are proud to have the privilege of exhibiting their recently developed preparations at the Interim Session. Included will be preventive and therapeutic preparations proven to be helpful in the practice of medicine and surgery and accepted as definite advances in the physician's armamentarium.

ELI LILLY AND COMPANY

Booths B-11, B-13

Featured at the Lilly exhibit will be new therapeutic developments and a demonstration of the Blood Sugar Screening Test (Wilkerson-Hefmann Method). This new test takes only five minutes to perform, is accurate within 5 mg. per cent of true glucose value and requires but 0.1 cc. of blood. No preparation, standardization, pipetting, titration, or distilled water is necessary. Your Lilly medical service representative cordially invites you to visit the Lilly exhibit located in booths B-11 and B-13.

J. B. LIPPINCOTT COMPANY

Booth A-31

J. B. Lippincott Company presents an interesting and active exhibit of professional publishing. With the "pulse of practice" centering in an advisory editorial board of active clinicians who constantly review the field, current and coming trends in medicine and surgery are known continually. On the studied recommendations of these medical leaders, Lippincott Selected Professional Books are undertaken.

LUZIER'S, INC.

Booth B-2

A complete display of Luzier's Fine Cosmetics and Perfumes will be exhibited in Booth B-2. This will be of interest to dermatologists and allergists as well as to the ladies who visit the Convention. Officials of Luzier's, Inc., will be on hand to explain Luzier's Service in the field of allergy.

M & R DIETETIC LABORATORIES, INC.

Booth C-6

Similac, a food for infants, derived either partially or entirely of breast milk, will be the center of interest at the M & R Dietetic exhibit. Representatives will appreciate the opportunity to discuss the merit and suggested application for both the normal and special feeding cases.

THE S. E. MASSENGILL COMPANY

Booth D-25

The various Council-Accepted Massengill pharmaceuticals will be displayed at the Interim Meeting. Among these is Methadone, the new synthetic analgesic which roughly parallels the action of morphine. Company representatives will be on hand to discuss various Massengill preparations and to arrange for periodic visits by Massengill sales representatives to physicians not being called on regularly.

F. MATTERN MANUFACTURING CO.

Booth C-10

At the Mattern booth visitors may see the new MFX 200 Unit with push-button ... n. In addition, ... r Mattern units be available.

MEAD JOHNSON & COMPANY

Booth C-5

Amigen and Protolysate will highlight the Mead Johnson Interim display. Mead Johnson has pioneered the amino acid field commercially; the products have been described in more than four hundred articles in the medical literature. Trained representatives will be at the Mead exhibit to discuss details of the new amino acid products. Shown also will be Dextrin-Maltose, Pabulum, Pabena, Oleum Percormorphum, and the other Mead products used in Infant Nutrition. Protolysate, a new high-protein product will be displayed, also Lomolac for low-sodium diets.

THE MEDICAL BUREAU

Booth A-1

Burnelle Larson offers the facilities of The Medical Bureau, an organization serving as counselor in problems of medical personnel to medical schools and universities, public health organizations, hospitals and institutions, group clinics, physicians in private practice and industry. The records of Diplomates of the American Boards, younger physicians interested in obtaining training and, also, of administrators, executive and supervising nurses, scientists, laboratory technicians, x-ray technicians, social workers and dietitians are available to those interested in the completion or re-organization of their staffs.

THE MEDICAL PROTECTIVE CO.

Booth B-15

The Medical Protective Company's representative ... a professional ... ites you to visit ... familiar with the principles of the reciprocal rights and duties of a doctor and patient and with the circumstances peculiar to that relationship. He will be glad to explain how his Company meets the exacting requirements of adequate liability protection, which are peculiar to the Professional Liability field.

THE MENNEN COMPANY

Booth B-17

The Mennen exhibit will include: Mennen Baby Oil, Baby Powder, Mennen Castile Baby Soap, Tins-for-Tots (colton tipped applicators) and Baby Cream.

MERCK & CO., INC.

Booth D-12

The Merck exhibit will be devoted to the important subject of streptomycin with emphasis on its role in the treatment of tuberculosis. X-rays taken before and after the use of streptomycin in patients with the following types of tuberculous lesions are on display: Patient A—Advanced caseous tuberculous in a diabetic;

Patent B—Advanced pulmonary tuberculosis and tuberculous pyopneumothorax; Patent C—Advanced pulmonary and laryngeal tuberculosis; Patent D—Acute millary pulmonary and ulcerative oropharyngeal tuberculosis.

THE WM. S. MERRELL COMPANY

Booth A-24

Featured here will be *Diathane Ointment* with *Oxyquinoline Benzate*, an improved preparation for applying an anesthetic to areas that require prolonged contact and where it is desirable to provide a protective antiseptic coating. Of relatively low toxicity, *Diathane Ointment* with *Oxyquinoline Benzate* has established a reputation for safety in clinical use.

MINE SAFETY APPLIANCES CO.

Booth D-31

The MSA Exhibit will feature the Pneumophore, the wartime development of the Aero Medical Laboratories at Wright Field. It will include photographs of the Pneumophore in clinical use as an emergency respiratory aid in Polymyositis and a therapeutic adjunct in the treatment of Anthrax-skin lesions. The treatment of Anthrax-skin lesions is a comparatively late development which has grown out of clinical work at the Barton Memorial Hospital, Philadelphia, and White Haven Hospital, White Haven, Pennsylvania.

THE C. V. MOSBY CO.

Booth A-15

Visitors attending the Interim Session are cordially invited to visit the MOSBY booth, A-15, just inside the exhibit hall. Courteous attendants will be in charge to serve the doctors on their book needs. Among the new titles to be displayed will be Anderson, "Pathology"; Igenfritz, "Pre-operative and Postoperative Care"; Egel, "Treatment of Cerebral Palsy Child"; Kramer, "Clinical Orthoptics"; Dunbar, "Psychosomatic Diagnosis and Treatment"; Black-Vaughan, "Practice of Allergy"; Kleiner, "Human Biochemistry"; and more than twenty other new books and new editions.

G. H. PACKWOOD MFG. CO.

C-21 (5½)

The Packwood exhibit will feature improved *Paxlanosav Heavy Duty Granulated Skin Cleanser* into which greater amounts of *Paxlanosav Emollient* have been integrated. *Paxlanosav Emollient* combines generous quantities of lanolin plus other fine skin normalizers that make it more effective than lanolin alone because more remains during the wash to help protect the natural acid mantle of the skin. In addition to the recognized remarkable cleansing ability of *Paxlanosav Heavy Duty*, other improvements have been made to keep it free-flowing in any powdered soap dispenser, to increase the lather, and to make it more economical to use.

PARAVOX, INC.

Booth C-17

A brilliantly lighted neon display will greet visitors at the Paravox booth. The various production stages of the Paravox Hearing Aids are graphically mounted against a black mirrored surface with gold lettering. Each part is made from an unusual iridescently luminous orange plastic and is extremely effective. This use of plastic in the production of their product recently won the first and only award in the Communications Class of the Modern Plastic's seventh annual competition.

PARKE, DAVIS & COMPANY

Booth D-1

Members of the service staff of Parke, Davis & Company will be at the exhibit for relating to registered pharmacists classified in their pharmaceutical, biologic, and medicinal lists. Unusual Specialties—Benadryl, Theophylline, Mapharsin, D- and various Biologics in the exhibit. You are cordially invited to call at the P-D booth with the assurance your interest will indeed be very much appreciated.

THE E. L. PATCH CO.

Booths B-32, B-34

Their two most recently Council-accepted products—*ALZINOX* and *GLYTHEONATE*—will merit your attention at this exhibit. *Alzinox* is the Patch brand of Dihydroxy Aluminum Aminoacetate, combining the amino acid, glycine, with aluminum. This

combination is of particular value in hyperacidity and peptic ulcer because it provides both rapid and prolonged action without acid rebound. *Glytheonate Tablets* and *Suppositories* provide *Theophylline Sodium Glycinate* permitting high dosage levels of *Theophylline* with minimum gastric irritation. Patch representatives will be glad to welcome you and tell you about these new products, and also about your old friend, *KONDREMUL*.

PET MILK CO.

Booth B-25

An actual working model of a milk condensing plant in miniature will be exhibited by the Pet Milk Company in booth B-25. This exhibit offers an opportunity to obtain information about the production of Pet Milk, its use in infant feeding, and the time-saving Pet Milk services available to physicians. Miniature Pet Milk cans will be given to the physicians who visit the Pet Milk booth.

PETRA MANUFACTURING COMPANY

Booth C-28 (n ½)

Booth C-28 deserves the attention of every convention visitor interested in professional garments for the doctor, nurse, or patient. These protective plastic garments—aprons and other articles—are precision designed and manufactured to give protection against acids, liquids, dust, dirt, chemicals. They are easily kept clean; a whisk of a damp cloth will wipe off any accumulations on the material.

PHILIP MORRIS & CO.

Booths A-2, A-3

Philip Morris & Company will demonstrate the method by which it was found that Philip Morris Cigarettes, in which diethylene glycol is used as the hygroscopic agent, are less irritating than other cigarettes. Their representative will be happy to discuss researches on this subject and problems on the physiological effects of smoking.

W. P. PRIOR COMPANY

Booth C-4

Of special interest at the Prior exhibit is a new volume of *Tice's Medicine on Gastrointestinal Diseases*. This year several hundred new pages were furnished to owners of these sets, including an entirely new volume for *Tice's Medicine on Gastrointestinal Diseases*.

PROFESSIONAL BUDGET PLAN

Booth C-8

Efficient office organization, effective control of accounts, and ethical practice-building ideas will be featured at the exhibit of the Professional Budget Plan. Collection of cash and time payments (old accounts, too), a smoothly functioning appointment system, and simplified bookkeeping are but three of the major points covered. See the special counselor at the booth to learn how this modern business system fits your practice.

THE PYRAMID RUBBER CO.

Booth B-23

Evenflo "America's Most Popular" All-in-One Nurser will be displayed in four and eight ounce sizes, both individually and in attractive Layette Packages. Equipment and illustrations will demonstrate how Evenflo "Breathes as it Feeds." Also, be sure to see the new Evenflo Brushless Baby Bottle Cleanser which dissolves milk film like magic.

RALSTON PURINA CO.

Booths C-23, D-19

The Ralston Purina Company presents a beautiful new booth. Colorful translights graphically illustrate nutrition facts about their two whole wheat hot cereals—Instant Ralston and Hot Ralston—and show dietary uses for Ry-Krisp and Shredded Ralston. You can register for their excellent low calorie diet booklets, for five valuable allergy diets, and for a set of Feeding Direction forms for infants and young children. These are valuable time-saving services for the busy physician.

REXALL DRUG COMPANY

Booth C-11

At the Rexall exhibit you will be interested in learning all about the *Petechiometer*, pronounced *PEE-TEE-KEY-AH-MET-ER*—a new clinical device used in the measurement of increased capillary fragility and for the estimation of the

therapeutic effect of drugs used in the treatment of increased capillary wall weakness. Increased capillary fragility is a syndrome complicating many illnesses.

SANBORN COMPANY

Booth D-11

On exhibit in Booth D-11 will be three completely new developments in instruments for cardiac diagnosis and research: the *Sanborn Electromanometer*, for direct recording of blood pressures (venous and arterial), intra-cardiac and spinal pressures, etc.; the "Poly-Viso," a two-to-four channel recorder for electrocardiograms, blood pressure, sphygmogram, electrokymogram, ballistocardiogram and other phenomena; and the *Sanborn Electrokytograph*. Also on display will be the popular *Sanborn Instruments* for clinical use: the *Viso-Cardiette*, the *Instomatic Cardiette*, and the new *Sanborn Metabolism Tester—The Metabulator*.

SANDOZ PHARMACEUTICALS

Booth A-20

Physicians interested in migraine should visit the Sandoz exhibit, featuring an animated presentation of the current theory of the mechanism of migraine headache and relief following administration of *Gynergen* (ergotamine tartrate). Other preparations displayed include *Digilandin* (crystalline glycosides of *Digitalis lanata*), *Sandozoptal*, *Sellarion* and *Calglucon* (the original calcium gluconate).

W. B. SAUNDERS COMPANY

Booth A-21

This Company extends a cordial invitation to visit their exhibit where they will show their complete line of medical books including Hyman's "Integrated Practice of Medicine," "Gastro-entology," Thorner's "Psychiatry in General Practice," Kinsey's "Sexual Behavior in the Human Male," Beckman's "Treatment," 1948 Collected Papers of the Mayo Clinic, Meleney's "Surgical Infections," Lyons & Woodhall's "Atlas of Peripheral Nerve Injuries," Crile's "Thyroid Disease," Snyder's "Obstetric Analgesia and the Child," DeGowin, Hardin & Alsever's "Blood Transfusion," Dowling's "Acute Bacterial Diseases," A.M.A. Intern's Manual, Brans' "Treatment of Heart Disease," Cecil's "Practice of Medicine," and many others.

SCHERING CORPORATION

Booth A-12

Schering Corporation, the world's largest manufacturer of hormones, will feature *Estring* (ethinyl estradiol) the most potent oral estrogen in clinical use today. *Neotopax* a safe urographic radiopaque medium, and *Protodax*, a standard cholecystographic medium, will also be displayed. Members of the medical and professional service staffs of Schering will be present to welcome inquiries on these important Council-accepted preparations.

SEARER RUBBER COMPANY

Booth B-29

The manufacturer of the "STEADIFEEED" unique aspects of this Unit. A trial of a feeding prove to be a nighting problems you have encountered. Stop by for professional samples and additional details. Your visit is anticipated.

G. D. SEARLE & CO.

Booths A-9, A-11

At the Searle booths a large number of anatomic and pathologic subjects will be exhibited in colored translights, colored slides and plastic models. They will illustrate such conditions as congestive heart failure, bronchial asthma, hay fever, colitis, amebiasis, active rheumatoid arthritis, etc. Featured Products of Searle Research will be *Aminophyllin*, *Metamucil*, *Diodoquin*, and *Gold Sodium Thiosulfate*.

SHAMPAINE COMPANY

Booth C-12

The Shampaine Company plans to exhibit its completely head-end controlled Perfection Major Operating Table, the improved Garfield Protoscopic Table, the famous Martin All-Purpose Chair-Table, the Steelflex Physicians Examining Table, and a variety of Shampaine quality furniture and accessories. Literature will also be available illustrating and describing completely new Shampaine Obstetric and Delivery Tables, as well as the new Hermann Major Operating Table which for all-around maneuverability is in a class by itself.

SHARP & DOHME
Booths B-20, B-22

Sharp & Dohme extends a cordial welcome to all visitors at booths B-20 and B-22 where 'Delcos' Protein-Carbohydrate Granules for high-dosage protein therapy will be featured. Protein replacement therapy usually requires large and prolonged dosage—100 to 200 Gm. of protein daily, for several weeks. The simplest route is by mouth, where the only considerable protection from wasteful use as energy by the presence of carbohydrate, 30%, and wholly palatable even in big doses, maintained for weeks.

SHAY MEDICAL AGENCY
Booth A-7

Blanche Shay, Director, and other representatives of the Shay Medical Agency extend a warm and cordial invitation to all to visit them. There you may discuss your employment problem in strict confidence. Whether you are an employer seeking help or an applicant seeking a position, they can assist you. Your employment problem is their business—let them solve it for you.

THE SMITH-DORSEY COMPANY
Booth B-4

Aminophylline Suppositories and Estrogenic Hormones will be shown at the Smith-Dorsey exhibit as well as a wide variety of injectable preparations. Physicians are invited to make the Dorsey booth their headquarters during the show. Representatives will be happy to discuss the background and use of all products on display.

SMITH, KLINE & FRENCH LABS.
Booth D-7

The effectiveness of 'Benzedrine' Sulfate, N.N.R. (racemic amphetamine sulfate, S. K. F.) in controlling appetite in the treatment of overweight makes it imperative that every physician be conversant with the facts regarding this modern drug which alone successfully inhibits appetite. The use of thyroid in conjunction with 'Benzedrine' Sulfate is obviously superfluous say the manufacturers since thyroid is felt to be of virtually no value in weight reduction and may even be injurious, except when used alone to correct hypothyroidism.

E. R. SQUIBB & SONS
Booth B-9

Squibb will present televised surgical and clinical procedures at this year's AMA Interim Session. Television cameras will be located at the Firmin Desloge, St. Mary's and Barnes Hospitals. Programs will be presented over Station KSD-TV. Further information may be had at the Squibb Technical Exhibit—Booth B-9. Cooperating in the presentation are the Rev. Alphonse M. Schwitalia, Dean of St. Louis University School of Medicine, and Dr. Robert A. Moore, Dean of Washington University School of Medicine.

STEPHENSON CORPORATION
Booth C-13

In C-13 will be shown all models of the Stephenson Resuscitator. See how you can now reduce operating pressures as indicated and mix air with oxygen as signs of anoxia disappear. This leaves an inert gas in the alveoli and prolongs the life of the oxygen tank.

R. J. STRASBURGH CO.
Booth B-30

Easier and more effective means of managing superficial mycotic infections featuring the latest development in fatty acid therapy—Caprylic Acid and its salts—will be on display here for your evaluation. Members of the professional service staff of Strasburgh will be at your service.

SWIFT & COMPANY
Booth A-18

All-meat baby foods, Swift's Meats for Babies (Strained)—for very young babies—and Swift's Meats for Juniors (Diced)—all exhibited by protein, in six part and liver. These products are also gaining rapid acceptance for adult special diets. Representatives at the Swift & Company

booth will be pleased to have you taste and examine these products and to supply you with informative literature.

TAMPAX INCORPORATED
Booth C-14

With the protection, preference for the T. . . . menstrual to review the authoritative information on appropriate use of the three absorbencies—JUNIOR, REGULAR and SUPER. Trained educational consultants will welcome an opportunity to discuss these exclusive features with you at Booth C-14. You will also be interested in seeing the new Tampax Vendor! Ready accessibility, better sanitation and reduction in plumbing problems are a few of the advantages cited in current reports from installations.

CHARLES C THOMAS, PUBLISHER
Booth D-5

New monographs on speciality subjects for the general practitioner and for the specialist as well will highlight the Charles C. Thomas Publishers exhibit. Examples of these are: *Bast and Anson—THE TEMPORAL BONE AND THE EAR; De-Courcy and SURGERY; me—THE SURGICAL RADIOLOGICAL PLASTIC GERY; See AGENTS.* Many new titles have been added in the American Lecture Series since the last meeting of the American Medical Association.

U. S. VITAMIN CORP.
Booth D-16

Enlarged color photographs of common oral lesions of nutritional deficiencies including glossitis, cheilosis, gingivitis and others . . . as well as improvement following administration of complete vitamin therapy . . . will attract your attention here. Illustrated literature, will be offered.

THE UPJOHN CO.
Booths B-8, B-10

"Adrennl Cortex and Resistance" is the theme of the Upjohn exhibit. The central panel symbolizes that man's resistance to stress is being increased by science. The other panels show the effect on the adrenals of various stresses—infection, exercise, surgery, and anoxia. The final panel shows the relative potency of adrenal cortex sterile solution and lipo-adrenal cortex sterile solution.

WALGREEN DRUG STORES
Booth A-19

Something new in technical exhibits awaits you at the Walgreen booth, A-19—a panoramic display of the latest accepted pharmaceutical developments in each field of medicine together with descriptive literature on each of the products. Members of the medical profession are cordially invited to stop by. "You're always welcome at Walgreens!"

WALLACE & TIERNAN PRODUCTS, INC.
Booth D-6

Visiting physicians are cordially invited to visit the Wallace & Tiernan exhibit, booth D-6. In addition to the widely used prescription amid, Monomestrol will display Soltrade Accepted sclerosing veins. treatment of varicose veins.

WHIRLPOOL CARRIAGE, INC.
Booth D-18

of this exhibit is of the Schroeter ch offers partial and complete whirlpool therapy in any tub. The patient can be manipulated while receiving whirlpool therapy for every part of the body. Spray therapy is also featured. The carriage is a compact, portable and well-constructed piece of home, office and hospital equipment.

WHITE LABORATORIES, INC.
Booths B-6, C-15

White's Dienestrol Tablets and Dienestrol Suspension (Council Accepted)—a new orally effective synthetic estrogen—will be featured here. Complete information and literature regarding the advantages of

Dienestrol's high biologic activity, excellent patient-tolerance, and economy will be available. Other products of White Laboratories, Inc. will be on display and White's Medical Service Representatives in attendance will be pleased to supply any further information requested.

THE WILLIAMS & WILKINS CO.
Booth A-23

The Williams and Wilkins Company, Medical Book Publishers, will exhibit several new titles including *Grullee and Eley, The Child in Health and Disease; Rehmuss, Albrecht, and Price, Practical Therapeutics; and Kemp, Elementary Anesthesia.* A special feature of the exhibit will be Brodsky's *Atlas of Oral and Facial Lesions*, which comprises a book of text and 100 picture slides in color. See the Williams and Wilkins Exhibit at Booth A-23.

WINTHROP-STEARN'S, INC.
Booth B-3

WINTHROP-STEARN'S, INC. extends a cordial invitation to visit their booth where they will feature transparencies of beautiful medical art by Mr. Leon Schlossberg. This well-known artist was a pupil and associate of the late Max Broedel, the dean of medical artists and first American professor of medical art (at Johns Hopkins University). His work reflects the impressive style of Broedel to which has been added a unique transparency technique. The exhibit includes (1) kidney with renal pelvis and calices; (2) cardiovascular failure and edema; (3) brain, including visualization of the thalamus, hypothalamus, and medulla oblongata.

WOODWARD MEDICAL PERSONNEL BUREAU
Booth A-32

An opportunity to discuss your personnel problems is offered by the Woodward Medical Personnel Bureau in Booth A-32. Many attractive openings from coast to coast and some interesting foreign possibilities are available. Whether your needs are for the present or future, stop by and become acquainted with this organization which has served the profession for 52 years.

WYETH INCORPORATED
Booth A-26

Wyeth Incorporated will devote special attention to their two distinctive specialties: MEONINE (dl-methionine) and NEOHETRAMINE. Meonine (in tablet form for oral use and crystalline for injection) is an important supplement to high protein diets in the treatment of liver damage, especially portal cirrhosis. NEOHETRAMINE is a remarkably safe antihistamine for the relief of allergic symptoms. Syrup Neohetramine, especially useful for infants and children, is also compatible with other drugs in prescriptions for coughs and colds.

THE YEAR BOOK PUBLISHERS
Booth D-3

At booth D-3, you will find the 1948 Year Books as well as general practice manuals and monographs which offer daily usefulness. Timely books to note include: *Greenhill's Office Gynecology* (5th Edition) and *Obstetrics in General Practice* (4th Edition); *Wright's Vascular Diseases in Clinical Practice*; *Young's Skull, Sinuses & Mastoids*; *Compere & Banks' Pictorial Handbook of Fracture Treatment*; and many others. You are invited to request any of these publications for 10 days' examination.

F. E. YOUNG & CO.
Booth C-30 (n/2)

F. E. Young & Company in booth C-30 will demonstrate Sulf-A-Test, an accurate ten second urine test for all sulfa drugs. Sulf-A-Test will show: (1) If previous treatment has been given; (2) If the kidneys are excreting the sulfa compounds after the initial dose; (3) The approximate mgs. % in the blood per 100 cc.; (4) If renal damage has been done. In such cases the sulfonamide compounds will be present after they normally should have been excreted from the body.

ZENITH RADIO CORP.
Booth C-19

At booth C-19 the Zenith Radio Corporation will exhibit the new Zenith '75' Hearing Aid—the radionic instrument formally announced to the profession in the *Journal of the American Medical Association* of February 28, 1948. Zenith representatives will be pleased to explain a plan whereby the '75' can be tested by any physician without cost or obligation to him or his hard-of-hearing patients.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Oct. 25, 1948.

"Walk Outs" at Veterans Administration Hospitals

An exhaustive study of irregular discharges, or "walk outs," of patients under treatment for tuberculosis in veterans' hospitals has been completed, and publication of the findings is scheduled for the near future. The investigation was made by William B. Tollen, Ph.D., of the Veterans Administration Research Division, at the request of Dr. J. B. Barnwell, chief of the Tuberculosis Division in the Department of Medicine and Surgery.

Between July 1946 and June 1947, the one year period covered by the survey, about 6,000 patients terminated their hospitalization without medical sanction, the study revealed. These irregular discharges outnumbered regular discharges by nearly 1,000.

According to data collected by social workers, measures most frequently mentioned which might have been effective in lowering the irregular discharge rate were: (1) intensive social case-work with the veteran and his family during and prior to hospitalization, (2) psychiatric treatment, and orientation of the hospital staff to a keener awareness of the emotional and psychic states of the tuberculous patient, (3) more personalized attention by staff members, (4) more careful and considerate application of hospital rules, policies and procedures governing hospitalization and (5) more sympathetic and discriminating applications of policies relative to pass privileges.

"Tuberculosis is a social as well as a medical problem," says the yet unpublished Tollen report. "Irregular discharge, which is part and parcel of the problem of treatment of tuberculosis, must be recognized as essentially a social problem. Tuberculous patients walk out of hospitals before treatment is completed because of the "push and pull" factors inside and outside the hospital that force them out. To prevent irregular discharges it is necessary to counteract these forces, to treat the total patient and not only the physical manifestations of his disease. The tuberculous patient needs help and support to withstand the emotional and psychic strains that hospitalization for tuberculosis produces.

"VA cannot by itself solve the problem of irregular discharge of tuberculous veterans, since the problem is basically social, a problem for the community at large. Failure of the community actively to seek a solution is costing the community more than the expense of eliminating and preventing irregular discharge of the tuberculous. Whoever can devise a method of convincing the community of this fact will serve not only the tuberculous but every other citizen as well."

Legion Still Cool Toward AMA-AHA Hospitalization Plan

It is still problematic whether the American Legion, at its national convention in Miami this month, will take up the veterans hospitalization proposal advanced last month by a committee representing American Medical Association and American Hospital Association. To date Washington offices of the Legion have not supplied certain factual data required for revision of the AMA-AHA prospectus which was presented to the Legion's medical advisory board, and there are definite signs that the veterans organization is opposed to the plan—provision for hospitalization of non-service-connected disabilities in nongovernmental hospitals, rather than in those operated by Veterans Administration, thereby permitting curtailment of VA's huge hospital expansion program and giving the prospective patient greater flexibility in choice of hospital and physician. Although it is possible that the issue will be discussed and acted on at the Miami convention, the fact that the advisory board has not yet passed on the proposal—even in principal—reduces the likelihood of such action.

Hawley Board Completes Pacific Field Trip

Members of the Committee on Medical and Hospital Services of the Armed Forces ("Hawley Board") have returned to Washington from a twenty-one day airplane tour of military medical facilities in Hawaii, Guam, Japan and Alaska. Recommendations designed to increase efficiency of medical and hospitalization operations through integration of Army, Navy and Air Force activities are in process of preparation for transmittal to Secretary of Defense James Forrestal. In Japan the committee members conferred with General Douglas MacArthur.

"Commanders of the three services facilitated immeasurably the studies being made by the committee," said Rear Admiral Joel T. Boone, executive secretary. "These field trips have contributed very materially to the wealth of information the committee has gathered for analysis."

Coming Medical Meetings

American Medical Association Interim Session, St. Louis, Municipal Auditorium, Nov. 30-Dec. 3. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Conference of State Secretaries and Editors, St. Louis, Hotel Statler, Nov. 28-29. Dr. George F. Lull, 535 N. Dearborn St., Chicago 10, Secretary.

National Medical Public Relations Conference, St. Louis, Hotel Statler, Nov. 27. Mr. Lawrence W. Rember, 535 N. Dearborn St., Chicago 10, Director.

American Academy of Dermatology and Syphilology, Chicago, Palmer House, Dec. 5-9. Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, Secretary.

American Academy of Pediatrics, Atlantic City, Chalfonte-Haddon Hall, Nov. 20-23. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association of Railway Surgeons, Chicago, Nov. 21-23. Dr. Raymond B. Kepner, 547 W. Jackson Blvd., Chicago 6, Secretary.

American Clinical and Climatological Association, Hot Springs, Va., The Homestead, Nov. 8-10. Dr. James Bordley III, Bassett Hospital, Cooperstown, N. Y., Secretary.

American Public Health Association, Boston, Nov. 8-12. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.

American Society for the Study of Arteriosclerosis, Chicago, Hotel Knickerbocker, Oct. 31-Nov. 1. Dr. O. J. Pollak, Quincy City Hospital, Quincy 69, Mass., Secretary.

American Society of Anesthesiologists, St. Louis, Hotel Statler, Nov. 4-6. Mr. John H. Hunt, 188 W. Randolph St., Chicago 1, Executive Secretary.

Association for Research in Nervous and Mental Diseases, New York, Waldorf-Astoria Hotel, Dec. 10-11. Dr. Clarence C. Hare, 700 W. 168th St., New York 32, Secretary.

Association of Military Surgeons of the United States, San Antonio, Texas, Nov. 11-13. Dr. James M. Phalen, Army Institute of Pathology, Washington 25, D. C., Secretary.

Eastern Section, American Federation for Clinical Research, Philadelphia, Temple University School of Medicine, Dec. 4. Dr. J. Edward Berk, Temple University School of Medicine, Philadelphia, Chairman.

International College of Surgeons, U. S. Chapter, St. Louis, Kiel Auditorium, Nov. 16-19. Mr. Ralph E. Osborne, 1516 Lake Shore Drive, Chicago, Business Secretary.

Inter-State Postgraduate Medical Association of North America, International Medical Assembly, Cleveland, Public Auditorium, Nov. 9-12. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 10-12. Dr. J. Basora Defillo, Box 3866, Santurce, Secretary.

Radiological Society of North America, San Francisco, Dec. 5-10. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Southern Psychiatric Association, Dallas, Texas, Hotel Adolphus, Dec. 6-7. Dr. Newdigate M. Owensby, 384 Peachtree St. N.E., Atlanta, Ga., Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 7-9. Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Western Surgical Association, St. Louis, Dec. 2-4. Dr. Warren H. Cole, 1853 W. Polk St., Chicago, 12, Secretary.

GOVERNMENT SERVICES

ARMY

FOOD INSTITUTE OF THE ARMED FORCES

George H. Berryman, Ph.D., has been named head of the Nutrition Branch of the Quartermaster Food and Container Institute for the Armed Forces, which is located in Chicago. Dr. Berryman will direct basic research on nutritional aspects of food used by the Armed Forces or procured by the Department of National Defense for feeding programs in other parts of the world. During the war, Dr. Berryman was Commanding Officer and Director of Research of the Medical Department's Nutrition Laboratory in Chicago. He received his doctorate at the University of Minnesota (Mayo Foundation) and is at present completing additional work at the University of Chicago Medical School which will lead to the M.D. degree.

Harry Spector, Ph.D., has joined the research staff of the Quartermaster Food and Container Institute for the Armed Forces, which is a laboratory of the Research and Development Branch of the Quartermaster General's Office. Dr. Spector will direct research on the effect of military operations on physiologic processes and also on the physiologic effects promoted by the feeding of processed foods deficient in nutritional content. He received his doctorate at the University of Wisconsin, where he was engaged in biochemical research, and later was on the faculty of the University of Illinois for five years.

Mr. Albert S. Henick recently became a member of the Chemical Branch of the Food and Container Institute, and Mr. Jack Mayer has been assigned to the Animal Products Branch. Mr. Henick formerly was with the laboratories of the American Meat Institute, conducting research principally on the autoxidation of fats, while Mr. Mayer for twelve years was with the United States Food and Drug Administration and for four years was on seafood inspection duties in the New Orleans area.

ARMY MEDICAL LIBRARY

At the October 21 meeting of the Association of Honorary Consultants to the Army Medical Library, the Nominating Committee nominated Dr. Morris Fishbein to succeed himself for a four year term on the Executive Committee, and Colonel Joseph H. McNinch, MC, USA, the Director of the Army Medical Library, was nominated to be Secretary of the Association for a term of three years.

The late Mrs. Emma Wheat Gilmore bequeathed a sum of money to the Army Medical Library for the establishment of a fund to be known as the Gilmore Bequest, to be used at the discretion of the Surgeon General for the benefit of the library.

The next meeting of the Committee of Consultants for the Study of the Indexes to Medical Literature published by the Army Medical Library will be in the latter half of November, at which meeting the persons preparing the indexes now in use will be asked to explain the preparation of their publications to the Committee.

TRAINING IN CIVILIAN INSTITUTIONS

The following additional Medical Department officers have been accepted by civilian schools and hospitals for training: Lieut. Colonels Stephen W. Ranson, Washington-Baltimore Psychoanalytic Institute, Baltimore, psychoanalysis; Louis S. Leland, Bellevue Hospital, New York, dermatology; Majors Frank A. Goss and Frank E. Bunts, Educational Institute, internal medicine; John F. Harris, Minnesota Department of Health, St. Paul, communicable disease control; Alfred A. Hellams, Cook County Graduate School of Medicine and Illinois Neuropsychiatric Institute, Chicago, neurology; Captains Richard A. Hayden, St. Mary's Hospital, Brooklyn, obstetrics and gynecology; Robert L. Koenig, New York University, New York, tropical medicine; Roy E. Campbell, Grady Memorial Hospital, Atlanta, Ga.; First Lieutenants Harry F.

Sproat, New York University, New York, tropical medicine; Charles A. DeLaney, Santa Monica Hospital, Santa Monica, Calif., intern training; Julio A. Ortiz, Freedmen's Hospital, Washington, D. C., intern training; Robert G. Rodriguez, St. Mary's Hospital, Philadelphia, intern training; Jean Brunkow, University of Colorado Medical Center, Denver, poliomyelitis course, and Second Lieutenant Barbara Ricker, University of Colorado Medical Center, Denver, course on poliomyelitis.

ADVANCED TRAINING IN CIVILIAN INSTITUTIONS

The following medical officers have been accepted for training in the civilian medical schools and hospitals indicated: Lieut. Col. Theodore E. Fischer, basic science, Georgetown University, Washington, D. C.; Major Gerald M. McDonnell, atomic medicine, University of Rochester, N. Y.; Lieuts. Joshua C. Bray, intern training, Abingdon Memorial Hospital, Abingdon, Va.; Robert H. Reid, intern training, New Haven Community Hospital, Conn.; Boyd C. Hindall, intern training, University of Minnesota Hospital, Minneapolis; William H. Sellors, intern training, Shadyside Hospital, Pittsburgh; Darrell J. Holman, intern training, Los Angeles County Hospital, Los Angeles; Raymond C. Mellinger, intern training, Henry Ford Hospital, Detroit; George W. Weber, intern training, Community General Hospital, Reading, Pa.; Moses M. Hartman, intern training, Community General Hospital, Reading, Pa., and Oliver R. Buesing, surgery, Emory University, Emory, Ga.

CERTIFICATIONS BY AMERICAN BOARDS

Eight additional Regular Army medical officers have recently been certified by American Boards. They are: Brig. Gen. Leonard D. Heaton, general surgery; Col. Oral B. Bolibaugh, orthopedic surgery; Lieut. Col. Edward A. Cleve, internal medicine; Lieut. Col. Richard L. Crone, internal medicine; Lieut. Col. Hugh W. Jones, Pathologic Anatomy and Clinical Pathology; Lieut. Col. Ryle A. Radke, internal medicine; Lieut. Col. Jack W. Schwartz, urology, and Major Jack H. Bristow, ophthalmology.

VISITORS AT MEDICAL MUSEUM

The Army Medical Museum of the Army Institute of Pathology, Washington, D. C., reports a record attendance of 3,041 visitors for Labor Day week end, which brings the total attendance of visitors for the last sixteen months to more than 175,000.

INSTITUTE OF PATHOLOGY

Dr. Arthur T. Hertig, Boston, delivered a special lecture on "Classification and Biological Behavior of Hydatid Moles" at the Army Institute of Pathology, Washington, D. C., September 24.

PERSONALS

Major Gen. John M. Willis, M. C., retired, has accepted a position as superintendent of Hamot Hospital at Erie, Pa. During the recent war General Willis was commanding officer of Camp Grant and the training school there for medical corpsmen and, after that assignment, served in the Pacific area.

The Surgeon General of the Army has appointed Dr. Ebbe C. Hoff, associate professor of neurophysiology at the Medical College of Virginia, Richmond, a member of a committee of consultants to advise on the indexing of medical literature. The committee will be under the direction of Dr. Lewis H. Weed, head of the committee on medical research of the National Research Council.

NAVY

NEW NAVY INTERNS

The following recent medical school graduates have accepted nominations as lieutenants (jg) in the Medical Corps Reserve under the Navy's Medical Intern Training Program. On completion of their internships, these young doctors will serve on active duty in the Navy: George F. Ashbury, Kent, Wash., to King County Hospital, Seattle; Arthur F. Boon, Grand Haven, Mich., to Detroit Receiving Hospital, Detroit; William W. Drummy Jr., Omaha, to Boston City Hospital, Boston; William J. Dunn, Wilmette, Ill., to Philadelphia General Hospital, Philadelphia; Edward A. Felder, Norwich, Conn., to Delaware Hospital, Inc., Wilmington, Del.; George R. Hanson, Nampa, Idaho, to St. Luke's Hospital, Denver; Saul I. Harrison, New York, to Western Pennsylvania Hospital, Pittsburgh; Robert C. Hastedt, Harrisburg, Pa., to George F. Geisinger Memorial Hospital, Danville, Pa.; George J. Haupt, Pittsburgh, to Jefferson Hospital, Philadelphia; Robert E. Herndon, Seminole, Okla., to St. Luke's Hospital, St. Louis; Harold H. Hopper, Monrovia, Calif., to Jefferson Hospital, Philadelphia; Robert W. Johnson, Alliance, Neb., to St. Luke's Hospital, Denver; Erling P. O. Larson, Davenport, Iowa, to City Hospital, St. Louis; Henry Litvin, Philadelphia, to Philadelphia General Hospital, Philadelphia; Paul T. Luckenbill, Kutztown, Pa., to University of Kansas Medical Center, Kansas City, Kan.; Joseph A. Mayer, Salt Lake City, to Holy Cross Hospital, Salt Lake City; Floy J. Moore, Moundsville, W. Va., to Presbyterian Hospital, Chicago; John P. Morris, Scarsdale, N. Y., to Grasslands Hospital, Valhalla, N. Y.; John A. Owen Jr., South Boston, Va., to Cincinnati General Hospital, Cincinnati; and Charles R. Propst, Sumter, S. C., to Philadelphia General Hospital, Philadelphia.

POSTGRADUATE INSTRUCTION

The following medical officers of the Regular Navy have been nominated to attend postgraduate instruction at the institutions indicated: Comdr. John D. Walters, residency in dermatology and syphilology, University of Pennsylvania Graduate School of Medicine, Philadelphia; Lieut. Comdr. George W. Russell, fellowship in surgery, Georgetown University Hospital, Washington, D. C.; Lieuts. Henry G. Gardiner Jr., instruction in neuropsychiatry, University of Texas Medical Branch, Galveston; Walter H. Jarvis Jr., residency in general practice, Naval Hospital, Portsmouth, Va.; Lieuts. (jg) Raleigh M. Hood, residency in surgery, Naval Hospital, San Diego, Calif.; William K. Woodard, residency in pediatrics, Naval Hospital, Chelsea, Mass.

PERSONALS

Lieutenants (jg) George T. Van Petten and Burton Willard have recently transferred from active Reserve status to the Medical Corps of the Regular Navy.

Dr. Friedrich P. Ellinger of Koenigsberg, Germany, has joined the staff of the Research Institute at the Naval Medical Center, Bethesda, Md., as the technical director of research in radiation biology. Dr. Ellinger came to the United States in 1938 and has been director of the Laboratory for Experimental Radiation Therapy Research at Long Island College of Medicine and consultant in radiology in charge of research at the United States Veterans Hospital, Bronx, N. Y.

Captain Henry D. Hubbard, MC, has been assigned to London, England, as staff Medical Officer, United States Naval Forces, Eastern Atlantic and Mediterranean.

MISCELLANEOUS

VANNEVAR BUSH RESIGNS

Vannevar Bush has resigned as chairman of the Research and Development Board of the National Military Establishment and will be succeeded in that position by Dr. Karl T. Compton, president of Massachusetts Institute of Technology. Dr. Bush received a master of science degree from Tufts College and has received honorary degrees from numerous other institutions of learning. He has been a teacher at his alma mater and at the Massachusetts Institute of Technology, and since 1939 he has been president of the Carnegie Institution of Washington. He is a trustee of Johns Hopkins University, a life member of the Massachusetts Institute of Technology Corporation, regent of the Smithsonian Institute; chairman of the National Defense Research Commission and, since 1941, director of the Office of Scientific Research and Development.

Dr. Compton is a graduate of Wooster College, Wooster, Ohio, and received his Ph.D. from Princeton University in 1912 and has received honorary degrees from many colleges and universities. He has been chairman of the Nutrition Foundation since 1941, a trustee of the Memorial Foundation for Neuro-Endocrine Research of Boston since 1932 and Brookings Institute since 1940. He was chairman of the United States Radar mission to the United Kingdom and a member of several special advisory committees on the atomic bomb. He has been president of the Massachusetts Institute of Technology since 1930.

physiology and will correlate activities of existing military and civilian laboratories in its field. The panel on shipboard and submarine medicine will be under the direction of Dr. E. J. DuBois, professor of physiology at Cornell University School of Medicine, New York. This panel will study methods of protection against undesirable conditions, means of increasing efficiency of personnel and treatment of conditions peculiar to shipboard and submarine operations, as well as the evaluation of factors influencing human function under environmental conditions related to the operation of ships and submarines.

A chairman has not yet been selected for the panel on military and field medicine, which will be responsible for coordination of research in medical and allied sciences concerned with support of troops under field conditions and will study problems related to hospitals, dispensaries and disaster situations.

The chairman of the Medical Sciences Committee is Dr. Francis C. Blake, who has just announced the appointment of Major General Malcolm C. Grow, the Air Surgeon, as Air Force representative on the committee.

MASS BCG VACCINATION IN EUROPE

The United Nations International Children's Emergency Fund contemplates tuberculin testing 40 to 50 million children in Europe and offering vaccination to all who are found uninfected by the tubercle bacillus. The Children's Fund has already allocated \$4,000,000 for the work, and the program will begin shortly under the sponsorship of the World Health Organization, the Danish Red Cross and other Scandinavian Red Cross chapters, and UNICEF. On October 2, Drs. Carroll E. Palmer and Lydia B. Edwards, Senior Surgeons of the United States Public Health Service, left New York for Paris to consult with Dr. Johannes Holm, director of the vaccination program, on the research implications of the undertaking. After completion of the European program, similar undertakings may be made in China, Southeast Asia, Latin America, Algeria, Tunisia and Morocco.

MEDICAL SCIENCES COMMITTEE APPROVES THREE PANELS

The Committee on Medical Sciences of the Research and Development Board, National Military Establishment, has set up three panels: aviation medicine, shipboard and submarine medicine, and military and field medicine. The panel on aviation medicine will be under the direction of E. J. Baldes, Ph.D., chairman of the Division of Physics and Biophysical Research, Mayo Clinic, Rochester, Minn. This panel will study medical problems involved in crash and safety programs and aviation

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

CONNECTICUT

State Hospital Appointments.—Dr. Ronald H. Kettle was appointed superintendent of the Norwich State Hospital, effective August 25. He has been acting superintendent since July 1948, when Dr. Riley H. Guthrie resigned. Dr. Conrad O. Ranger was appointed clinical director of the hospital beginning October 1. He has been consultant for the Veterans Administration at Manchester, N. H.

Research in Electroencephalography.—The Institute of Living at New Haven announces the appointment of Charles E. Henry, Ph.D., Chicago, to direct the expanded research program in electroencephalography and allied studies. Dr. Henry comes to Hartford from the Institute for Juvenile Research in Chicago. He was in charge of the electroencephalographic program for the Navy at Newport. Before his military service he had taught at Western Reserve University, Cleveland, and the State University of Iowa, Iowa City, and had been associated with the Bradley Home and School for Children in Providence, R. I.

ILLINOIS

Personal.—Dr. Maurice Lev, director of research in the department of pathology at Michael Reese Hospital, has been appointed assistant professor of pathology at the University of Illinois College of Medicine. Dr. Lev is a graduate of Creighton University School of Medicine, Omaha, 1934.

First State Tuberculosis Sanatorium.—Ground-breaking ceremonies marking the beginning of the first state hospital for the care of tuberculous patients were held at Mt. Vernon October 15. The sanatorium is to be constructed under the state-federal hospital construction program. Known as the Mt. Vernon State Tuberculosis Sanatorium, it will have a capacity of one hundred beds. Representatives of the Illinois State Medical Society, Illinois Hospital Association and the Illinois Tuberculosis Association, members of the state advisory council on hospitals, county sanatorium boards, local health, welfare and tuberculosis associations and the general public attended.

Chicago

Varicose Veins and Epilepsy.—The North Shore Branch of the Chicago Medical Society, meeting on November 2 at the Edgewater Beach Hotel, will hear Dr. Geza De Takats, University of Illinois, speak on the treatment of varicose veins. Dr. Frederick A. Gibbs, also of the University of Illinois, will speak on "Psychomotor Epilepsy."

Address by Dr. Ditttrick.—Dr. Howard Ditttrick, associate professor of medical history, Frank E. Bunts Educational Institute, Cleveland, will address a joint meeting of the Institute of Medicine of Chicago and the Society of Medical History of Chicago in the assembly room of the institute, John Crerar Library Building, November 19, on "Temple to Hospital in Care of the Sick."

Course in Endocrinology.—The American College of Surgeons is offering a course in endocrinology at La Salle Hotel, Chicago, November 1-6, which will present a review of recent developments in the field of endocrinology by leading teachers in the United States and Canada. The fee is \$30 for members and \$60 for nonmembers. The course is under the direction of Dr. Willard O. Thompson, clinical professor of medicine, University of Illinois College of Medicine.

INDIANA

Dr. Shumacker to Head Surgical Department.—Dr. Harris B. Shumacker Jr., associate professor of surgery at Yale University School of Medicine, New Haven, Conn., has been appointed professor and chairman of the department of surgery at the Indiana University School of Medicine, Bloomington-Indianapolis. Dr. Shumacker received his M.D. degree from Johns Hopkins University School of Medicine, Baltimore, 1932. He was assistant resident in surgery, obstetrics and gynecology at the New Haven (Conn.) Hospital in 1936, and was made resident surgeon the following year. He was an instructor in surgery in 1937-1938 at Yale University and from 1931 to 1948 at Johns Hopkins School of Medicine. He became an associate professor of surgery in 1946. During World War II he served as surgeon with the 118th General Hospital.

IDAHO

State Medical Election.—At the annual meeting of the Idaho State Medical Association, July 5-8, Dr. Franklin B. Jeppesen, Boise, became president and Dr. Walter R. West, Idaho Falls, president-elect; Dr. Alfred L. Popma, Boise, was named secretary-treasurer.

MAINE

State Clinical Meeting.—The Maine Medical Association will hold its clinical session at the Eastland Hotel, Portland, November 1-2. Clinics will be held at the Maine General Hospital, the Maine Eye and Ear Infirmary and Mercy Hospital. A symposium on cancer will be held Tuesday afternoon. Out of state speakers will be Dr. Grantley W. Taylor, Boston, "What Can Be Accomplished in Cancer Therapy," and Dr. T. Duckett Jones, Boston, speaking on "Rheumatic Fever" at the banquet Monday night.

MINNESOTA

Litzenberg Lectures.—The Minnesota Medical Foundation announces the establishment of the Litzenberg Lectures in honor of the late Dr. Jennings C. Litzenberg, formerly head of the department of obstetrics and gynecology at the University of Minnesota Medical School. The first lecture was given October 22 at the university by Dr. Everett D. Plass, of the State University of Iowa College of Medicine, Iowa City, on "Advances in Maternal Welfare."

MISSOURI

Jackson County Health Forum.—The Jackson County Health Forum sponsored by St. Luke's, St. Joseph, St. Mary's, Menorah and Trinity Lutheran hospitals, and approved by the Jackson County Medical Society, opened its twelfth season of lectures in the Municipal Auditorium, Kansas City, September 15. On October 20 the lecture was "A New World for the Hard of Hearing" by Dr. George E. Shambaugh Jr., Chicago; on November 17 Dr. Bayard T. Horton, Rochester, Minn., will speak on "Migraine Headaches"; on January 12, Dr. Cyril M. MacBryde, St. Louis, will lecture on "Modern Trends in Diabetic Treatment." These free lectures are open to the public; they are on the third Wednesday night of each month September through April, with the exception of December.

MISSISSIPPI

Student Loans.—Medical students interested in loans from the State Medical Education Board to become effective at mid-year have until December 1 to make their applications. They must have completed premedical college work and be accepted for enrolment in a class A medical school. On September 25 the State Medical Education Board had granted loans to 144 young men and women of Mississippi who are attending 24 medical schools throughout the nation.

NEW YORK

Rochester Academy Lectures.—On October 5 the Rochester Academy of Medicine began its annual series of lectures, which will continue on the first Tuesday of each succeeding month through May. The next four lectures are:

- Nov. 16, Winslow T. Tompkins, Philadelphia, Nutrition and Pregnancy.
- Dec. 7, I. Arthur Mirsky, Cincinnati, Ohio, Diabetes.
- Jan. 4, Charles R. Allison and Elmer O'Brien, Rochester, and William G. Farlow, Coldwater, Symposium on Bronchiectasis.
- Feb. 1, Milton J. E. Senn, New York, Child Psychology.

Postgraduate Instruction.—The Medical Society of the State of New York with the cooperation of the New York State Department of Health has arranged a lecture for the Jefferson County Medical Society at the Hotel Woodruff, Watertown, November 11, 8 p. m. Dr. Harry A. Steckel, Syracuse, will speak on "Psychosomatic Medicine." For the Lewis County Medical Society Dr. Steckel will lecture on "Alcoholism as a Medical Problem" at the St. Peter's Church, Lowville, November 4 at 8 p. m.

New York City

Physicians Art Club.—The New York Physicians Art Club held its sixteenth exhibition at the New York Academy of Medicine October 20-29. The academy is not open on Saturday or Sunday. There were no jury of awards and no prizes. The public was invited to the exhibition.

Courses in Diseases of the Chest.—A postgraduate course in Diseases of the Chest will be given at the Hotel New Yorker, November 8-13 under the sponsorship of the American College of Chest Physicians and with the cooperation of members of the staffs of the New York City medical schools and hospitals. Morning and afternoon sessions and luncheon round table discussions will be held. Application should be made to the American College of Chest Physicians, 500 North Dearborn St., Chicago 10. The fee is \$50.

Clinical Session on Chronic Pulmonary Diseases.—The Tuberculosis Sanatorium Conference of Metropolitan New York will hold a clinical session on chronic pulmonary diseases at the Cornell University Medical College Amphitheatre, November 10, at 8:15 p. m. A panel discussion will be held on "Bed Rest in the Treatment of Tuberculosis." Dr. Carl Muschenheim will be the moderator.

Public Health Week.—The Beth-El Hospital, Brooklyn, will conduct its annual Public Health Week for the Laity November 8-11. The following topics will be considered:

- Nov. 8, The Rh Factor, by Dr. Philip Levine, New York.
- Nov. 9, Diabetes, by Dr. Benjamin I. Ashe, New York.
- Nov. 10, Rheumatic Fever, by Dr. Leo M. Taran, Brooklyn.
- Nov. 11, Menopause, by Dr. Isadore C. Rubin, New York.

The meeting of November 8 will be held at the Hebrew Educational Alliance; those of November 9 and 10 at the Brooklyn Jewish Center, and that of November 11 at the East Midwood Jewish Center in Brooklyn. All meetings will begin at 8:30.

Twenty-Third Series of Friday Afternoon Lectures.—The New York Academy of Medicine is sponsoring its twenty-third series of Friday Afternoon Lectures open to the medical profession and to medical students at 4:30 beginning November 5 and extending through April 8. The program for the rest of this year is as follows:

- Nov. 5, E. Jefferson Browder, New York, Pain in the Low Back with Radiation into the Lower Extremity.
- Nov. 12, Harry Most, New York, The A. Walter Suiter Lecture, Tropical Diseases in Daily Practice in New York City.
- Nov. 19, Walter T. Dannreuther, New York, Ectopic Pregnancy.
- Dec. 3, Sami Granick, Ph.D., New York, Iron Metabolism and Hemochromatosis.
- Dec. 17, Harold A. Abramson, New York, Asthma.

OHIO

Professor LeBlanc Dies.—Thomas J. LeBlanc, Sc.D., head of department of preventive medicine, University of Cincinnati College of Medicine, died September 9 at Christian R. Holmes Hospital. Dr. LeBlanc was a fellow in 1920 of the Rockefeller Institute, served with U. S. Public Health Service 1924-1925 and had been a member of the faculty of the university since 1925.

BCG Vaccination.—The Academy of Medicine of Cleveland has approved the use of BCG vaccine in the central area of Cleveland. At present, students in the School of Medicine of Western Reserve University and in the nursing schools of several hospitals are being vaccinated. Only persons with no evidence of tuberculosis are to be vaccinated. The work is under the direction of the city commissioner of health and the controller of tuberculosis. U. S. Public Health Service officials are giving technical assistance.

OREGON

Course in Allergy.—A fall graduate instructional course in allergy will be given at the University of Oregon Medical School, Portland, November 8-12 in cooperation with the American College of Allergists. Subjects for lectures are: fundamentals of allergy and miscellaneous manifestations, gastrointestinal and food allergy, dermatologic allergy, miscellaneous manifestations of allergy and respiratory and miscellaneous allergies. The fee for the course is \$75, payable at the medical school registration desk. Applications can be secured by writing Dr. Fred W. Wittich, The American College of Allergists, 423 LaSalle Medical Building, Minneapolis 2, Minn.

SOUTH CAROLINA

Portrait of Dr. Barron.—A portrait of Dr. William R. Barron, Columbia, was unveiled August 6 in the new wing of the South Carolina Baptist Hospital. The portrait was provided by fellow members of the Columbia Medical Society of Richland County and close friends. Dr. Barron, now retired, practiced for many years in Columbia.

Alumni Postgraduate Seminar.—The Alumni Association of the Medical College of the State of South Carolina will hold a seminar at the college November 2-4. The speakers will be:

- R. Glenwood Spurling, Louisville, Ky., Lumbar Intervertebral Disc Lesions.
- Alexander Brunswick, New York, Some Very Favorable Results in the Treatment of Advanced, So-Called Inoperable, Abdominal Carcinoma.
- John B. McKittrick, Boston, Surgery in the Diabetic.
- Allan M. Butler, Boston, Treatment of Diarrheal Disease in Infancy.
- Paul Titus, Pittsburgh, Research in Obstetrics and Gynecology.
- Emmett D. Colvin, Atlanta, Management of Prolonged Labor Due to Uterine Inertia.
- Wallace M. Yater, Washington, D. C., Coronary Artery Disease.
- Edgar Hull, New Orleans, The Diagnosis and Treatment of Peptic Ulcer.
- Shields Warren, Boston, Diagnostic and Therapeutic Use of Radioactive Isotopes.

At the Founders' Day Banquet November 4 Dr. Warren will speak on "The Atomic Age in Medicine."

TENNESSEE

Additional Radioisotope Courses.—The Oak Ridge Institute of Nuclear Studies will offer four additional courses in technics of using radioisotopes in research this fall and winter. New courses and priority of attendance are: Oct. 25, industrial laboratories; Jan. 3, 1949, government laboratories; Feb. 14, 1949, medical personnel, and March 14, 1949, no priority assigned. The four week courses are designed to teach scientists how to apply radioisotopes in their own research safely. Participants are selected by the institute with the assistance of the Isotopes Division and the Division of Biology and Medicine of the Atomic Energy Commission, and preference is given to persons who are almost ready to use radioisotopes in their research. The courses are about two thirds laboratory work and one third lecture and seminars. For further information write the institute at P.O. Box 117, Oak Ridge.

Circuit Postgraduate Instruction in Cancer.—Dr. Lyndon E. Lee Jr. of the University of Michigan, Ann Arbor, is continuing the postgraduate instruction courses in cancer begun a year ago by the Tennessee State Medical Association, the Tennessee Division of the American Cancer Society, the State Department of Public Health, Vanderbilt University School of Medicine, Nashville, and the University of Tennessee College of Medicine, Memphis. He is giving ten week courses to five groups in east Tennessee in a circuit known as Sweetwater Valley, where two hundred and fifty-three doctors are enrolled. The program has another nine months to function. In the first year Dr. Lee covered twenty-five teaching centers and about fifty counties, where five hundred and eighteen physicians were enrolled. On completion of this circuit, the state medical association hopes to open immediately a two year program on "Psychiatry, as Applied to the Practice of Medicine." Any medical school or hospital that will grant a leave of absence to a physician qualified to give this course should communicate with Dr. T. S. Hill, co-chairman, Postgraduate Committee, Gailor Memorial Psychiatric Hospital, Memphis 7.

TEXAS

Dr. DeBakey Appointed Professor of Surgery.—Dr. Michael E. DeBakey, associate professor of surgery at Tulane University of Louisiana School of Medicine, New Orleans, has been appointed Judson L. Taylor professor of surgery at Baylor University College of Medicine, Houston. Dr. DeBakey was born in Lake Charles, La., 1908, is a graduate of Tulane and has been on the staff of Touro Infirmary and visiting surgeon at Charity and Mercy hospitals in New Orleans. He is the author or co-author, chiefly with Dr. Alton Ochsner, of numerous surgical papers. During the war he served in the general surgery branch, Surgical Consultants Division, office of the Surgeon General. He has lately been appointed a member of the medical advisory committee of the National Security Resources Board.

WASHINGTON

Poliomyelitis Centers in Eleven Cities.—The State Medical Advisory Committee on Poliomyelitis has approved a plan for the development of "Polio Centers" in eleven cities within the state to aid in the management of local outbreaks of poliomyelitis. The committee, representing various medical, hospital, nursing and similar associations of the state, and serving in an advisory capacity to the State Department of Health and the National Foundation for Infantile Paralysis, will develop and promote the plan. The centers are to have one or more hospitals equipped with special facilities and trained personnel to take care of patients with poliomyelitis.

PUERTO RICO

Examine Imported Flour.—The Department of Health of Puerto Rico has announced that all imports of wheat flour into the island will be examined to determine whether additional vitamins and minerals have been added, as provided by Act no. 182, approved May 12 by the Insular Legislature. Wholesale merchants were given an opportunity up to October 1 to dispose of their stocks of nonenriched flour.

First Tuberculosis Hospital.—Dr. E. Garrido Morales, medical consultant, U. S. Public Health Service in San Juan, speaking before a Tuberculosis Institute, October 3, reported that Puerto Rico needs 11,191 hospital beds; the island has only 2,254, 1,892 of which are operated by the government and 362 by private institutions. The first tuberculosis hospital to be constructed with federal and insular funds will be located at Rico Piedras and will have an eight hundred bed capacity. It is being constructed at a cost of over \$2,000,000. There are twenty-two tuberculosis centers established on the island as compared to 5 in 1935. The work on these centers is performed under the supervision of tuberculosis specialists with fluoroscope equipment and, in the majority of the centers, x-ray equipment.

GENERAL

Annual Meeting of Special Society.—The annual meeting of the American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery will be held at the Hotel Waldorf Astoria, New York, on Thursday, November 4. A testimonial dinner will be held at 6 p. m. for Dr. Samuel Fomon, New York, honorary president, who will speak on "Recent Development in Rhinoplastic Surgery Based on New Physiologic Concepts."

Anesthesiologists Meeting.—The American Society of Anesthesiologists will hold its annual meeting at the Statler Hotel, St. Louis, November 3-6, under the presidency of Dr. Charles F. McCuskey, Los Angeles. The scientific program, beginning November 5, includes symposiums on recent developments affecting anesthesiologists; the practice of anesthesiology; blood; blood substitutes; supportive therapy and associated pathology, and anesthesia and related problems in infants and children.

Poliomyelitis Declines Sharply.—The U. S. Public Health Service reports a decrease of 321 cases of poliomyelitis during the week ended October 9 as compared with the preceding week, the sharpest weekly decline this year. A total of 1,208 cases was reported for the week, as compared with 1,529 for the previous week, 1,142 in 1946 and a five year median of 639 for the corresponding week. The week's report brings the total to October 9 to 20,387, as compared with 19,644 in 1946 and a five year median of 10,296. The total for the entire year 1946 was 25,698. The following states have reported more than 1,000 cases to date: California 3,512, North Carolina 2,293, Texas 1,520 and New York 1,145.

Meeting of Association of Medical Colleges.—The annual meeting of the Association of American Medical Colleges will be held at the Hotel Greenbrier, White Sulphur Springs, W. Va., November 8-10. Among the speakers will be:

Cassius S. Van Slyke, Bethesda, Md., Relation of National Heart Act to the Medical Schools.

Stafford L. Warren, Los Angeles, Role of Biophysics in Medical Education.

Walter A. Bloedorn, Washington, D. C., Financial Aid to Medical Education.

Donald Slaughter, Vermillion, S. D., Clinical Clerkships for Sophomore Medical Students.

Major General Lewis B. Hershey, Washington, D. C., will give the dinner address.

Meeting of Radiological Society.—The annual meeting of the Radiological Society of North America will be held at the Fairmont Hotel, San Francisco, December 5-10 under the presidency of Dr. Leo H. Garland, San Francisco. Refresher courses on radiologic diagnosis and treatment and symposiums are included in the program. Among the speakers will be Drs. Fuller Albright, Boston; James F. Brailsford, Birmingham, England; William E. Chamberlain, Philadelphia; S. de Rienzo, Cordoba, Argentina; J. Frimann-Dahl, Oslo, Norway; J. W. Meredith, Manchester, England, and Raoul Perciras, Havana, Cuba, and Hermann J. Muller, Sc.D., Indiana University, Bloomington. Dr. Merrill Sosman, Boston, will give the annual society lecture.

International Congress of Radiology.—The next International Congress of Radiology will be held in London in the summer of 1950, under the presidency of Dr. Ralston Paterson, Manchester. The officers for the congress are: President, Dr. J. Ralston Paterson, Manchester; president emeritus, Dr. Alfred E. Barclay, Oxford; treasurer, Dr. H. Graham Hodgson, London; secretary-general, Dr. John W. McLaren, London. All recognized radiologic societies are being asked to supply a list of their members, and full details will be sent to each radiologist and published as soon as possible. An office for the congress has been established at 45 Lincoln's Inn Fields, London, W.C. 2.

Horace Wells Memorial Volume.—A 500 page book, "Horace Wells, Dentist; Father of Surgical Anesthesia," edited by Dr. William J. Gies, Columbia University, New York, will be ready for sale and distribution some time this month. As a centenary commemoration, the volume preserves and clarifies the origination and evolution of general surgical anesthesia. It presents the "proceedings of the centenary commemoration of Wells' discovery in 1844 and lists of Wells memorabilia, including bibliographies, memorials and testimonials." It may be obtained from Dr. Eugene M. Clifford, chairman, Horace Wells Centenary Committee, 57 Pratt Street, Hartford, Conn.

Control of New Synthetic Drugs.—The General Assembly of the United Nations on October 8 unanimously approved a draft of the protocol for the control of new types of synthetic drugs that have been discovered and manufactured since 1931. The document will be submitted to the various governments and will become effective thirty days after twenty-five or more of them have approved it. The signers must include, according

to the *New York Times*, at least five of the group of nations that signed the 1931 convention for limiting the manufacture and regulating the distribution of narcotic drugs at the League of Nations in Geneva. While it is believed that the governments of the fifty-eight member states will sign the protocol, the document can be renounced after five years "by an instrument in writing deposited with the Secretary General of the United Nations."

Quincy Kiwanis Foundation.—Dr. Harold Swanberg, Quincy, Ill., editor of the *Mississippi Valley Medical Journal*, has set up a trust, organized not for pecuniary profit, that will enable the Kiwanis Club of Quincy "to sponsor, undertake, or aid in one or more things of, a charitable, scientific, literary, or educational nature, which will bring public honor and respect to Kiwanis." This trust is being administered by a board of trustees, at least one of whom must be a physician. Contributions may be made by an individual to the foundation, which the trustees have named the "Swanberg Kiwanis Foundation." Dr. Swanberg, who contributed \$1,000 to the foundation and has agreed to make further contributions as income permits, is the only member of the Kiwanis Club of Quincy who has twice served as club president. The trustees have approved a hearing conservation program for school children of Quincy and Adams County as the first project of the foundation.

Executive Director of National Health Council.—Dr. Thomas D. Dublin, professor of preventive medicine and community health, Long Island College of Medicine, has been appointed executive director of the National Health Council, a nonprofit organization of national voluntary health agencies. Its aim is to prevent diseases and maintain health through a common plan of action of its members and the development of a widespread citizens' participation in health measures. Dr. Dublin, a graduate of Harvard Medical School, received his doctorate in public health from Johns Hopkins School of Hygiene and Public Health. He has served on the staff of the New York State Department of Health, has taught at Albany (N. Y.) Medical College and was a special lecturer at the DeLamar Institute of Public Health, Columbia University. The Rockefeller Foundation has made a grant of \$225,000 to the National Health Council, to be used over a three year period.

Academy of Dermatology and Syphilology.—The annual meeting of the American Academy of Dermatology and Syphilology will be held in Chicago December 4-9 under the presidency of Dr. Clyde L. Cumber, Cleveland. The principal sessions will be held at the Palmer House, with special courses in histopathology and mycology scheduled for December 4 and 5 at the medical schools of the University of Illinois and Northwestern University. Teaching clinics will be held on the afternoons of Monday, Tuesday and Wednesday. Informal discussion groups will meet at noon and at 5 p. m. sessions. Special courses in histopathology, mycology, roentgen ray and radium therapy, mucous membrane lesions, bacteriology of the skin, industrial dermatoses, specific granulomas and dermatoscleroses will be held under leaders in these various fields. Special lectures will be given on: "Certain Aspects of Blood Dyscrasias of Special Interest to Dermatologists," by Dr. Cyrus C. Sturgis, University of Michigan Medical School, Ann Arbor; "The Relation of Endocrines to Cutaneous Diseases," by Dr. Arthur A. Hellbaum and E. C. Keaty, University of Oklahoma School of Medicine, Oklahoma City.

Marriages

MITCHELL S. MATUSZKO, Amherst, Mass., to Miss Shirley Lorraine Parmington of Rochester, N. Y., June 11.

IRVIN HARRISON TRINCHER, Emory University, Ga., to Mrs. Margaret Vaughn Weatherly of Atlanta, in June.

EDWIN PEARSON PARKER III, Washington, D. C., to Miss Mary Elizabeth Neff of Richmond, Va., June 19.

WILLIS M. SPRINKLE, Marion, Va., to Miss Irma Chappell of Miami, Fla., in New York, June 27.

SAMUEL E. REITER, Sunmount, N. Y., to Miss Adele P. Seigel at Lake Placid, June 6.

JAMES J. GRACE, Montrose, Pa., to Miss Frances G. Thornton at Wilkes-Barre, June 19.

RICHARD W. HEFFNER, Cleveland, to Miss Carol Albrecht in Madison, Wis., June 20.

WILLIAM CHIN to Miss Nancy Abbott Wong, both of Washington, D. C., June 27.

JOHN E. SCHULTS, Brooklyn, to Miss Carol Saums of Garden City, N. Y., June 26.

Deaths

James Alexander Miller † New York; born in Roselle, N. J., March 27, 1874; Columbia University College of Physicians and Surgeons, New York, 1899; professor of clinical medicine at his alma mater from 1913 to 1945; specialist certified by the American Board of Internal Medicine; member of the American Trudeau Society, American Association of Thoracic Surgery, Association of American Physicians and the American Clinical and Climatological Association; a founder, past president and member of the board of directors of the New York Tuberculosis and Health Association; past president of the National Tuberculosis Association, which in May 1944 awarded him the Trudeau Medal; past president of the American College of Physicians; past president and since 1904 a fellow of the New York Academy of Medicine, serving since 1911 as a member of its committee on public relations; in 1947 received the Academy Medal as a "distinguished medical scientist in recognition of outstanding service to humanity"; during World War I he held the rank of major and served with the American Red Cross in France; for two years medical director of the Rockefeller Tuberculosis Commission in France; received the Chevalier Legion d'Honneur; in 1930 was appointed a special deputy health commissioner, serving as a consultant on tuberculosis, and later was appointed administrative consultant in tuberculosis to the city department of hospitals; in 1948 appointed to the joint administrative board of the Columbia-Presbyterian Medical Center; in a consultant physician capacity worked for many years with the tuberculosis division at Bellevue Hospital in New York, House of Rest at Sprain Ridge, Yonkers, and Trudeau (N. Y.) Sanatorium; in 1930 received the doctor of science and in 1937 the doctor of public health degree from New York University; alumni trustee, Columbia University; author of numerous contributions to medical literature on chronic pulmonary disease, particularly tuberculosis; contributor to Musser's "Internal Medicine"; died in Black Point, Conn., July 29, aged 74, of pancreaticitis.

Jennings Crawford Litzenberg † Minneapolis; born in Waukegan, Iowa, April 6, 1870; University of Minnesota College of Medicine and Surgery, Minneapolis, 1899; studied in Vienna, Berlin, London, Glasgow and Dublin; joined the faculty of his alma mater as an instructor in obstetrics in 1901, assistant professor from 1907 to 1910, associate professor of obstetrics and gynecology from 1910 to 1914, professor and head of the department from 1914 to 1938, when he retired with the rank of professor emeritus; formerly professor of obstetrics and gynecology at the graduate school; specialist certified by the American Board of Obstetrics and Gynecology, of which he had been a member; past president, vice president and in 1920 a member of the council of the American Gynecological Society; past president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hennepin County Medical Society, Minnesota Academy of Medicine and Central Association of Obstetricians and Gynecologists; honorary fellow of the Washington Gynecological Society; fellow of the American College of Surgeons; member of the House of Delegates in 1924, 1925, and from 1927 to 1929, and chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery, 1927-1928, American Medical Association; the Minnesota Medical Foundation recently established the Litzenberg Lecture in his honor; served on the staffs of the Nicollet Clinic, Fairview Hospital, University Hospital, Northwestern Hospital and Eitel Hospital, where he died August 15, aged 78, of coronary sclerosis.

William Hayes Breuer † St. James, Mo.; born in St. James, Mo., Oct. 19, 1876; Beaumont Hospital Medical College, St. Louis, 1898; served as president of the Missouri State Medical Association and councilor of the twenty-sixth district; president of the Phelps-Crawford-Dent-Pulaski Counties Medical Society; member of the House of Delegates of the American Medical Association in 1934, 1935, 1936 and 1937; an officer during World War I; served as mayor; formerly health commissioner of the city of St. James; affiliated with the State Federal Soldiers Home Hospital; on the staff of Waynesville (Mo.) General Hospital; served as president of the Phelps County Historical Society and for many years as president of the Chamber of Commerce; died July 16, aged 71, of coronary occlusion.

Arthur Chalmers Martin † Old Westbury, N. Y.; born in Shelter Island, N. Y., June 6, 1887; Cornell University Medical College, New York, 1908; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; fellow of the American College of Surgeons; past president of the Nassau County

Medical Society, Nassau County Surgical Society and the Nassau County Obstetrical Society; member of the Brooklyn Gynecological Society; attached to the British Army serving overseas during World War I; attached to Nassau Hospital, Mineola, Huntington (N. Y.) Hospital, North Country Community Hospital in Glen Cove and Meadowbrook Hospital in Hempstead; died July 28, aged 61, of chronic cardiovascular renal disease.

Stephen Clifford McCoy, Louisville, Ky.; born Jan. 3, 1873; Southwestern Homeopathic Medical College and Hospital, Louisville, 1901; Kentucky University Medical Department, Louisville, 1906; member of the American Urological Association and the American Medical Association; fellow of the American College of Surgeons; served during World War I; formerly affiliated with the U. S. Public Health Service; at one time on the faculty of the University of Louisville School of Medicine; on the staffs of Louisville City Hospital, St. Anthony's Hospital and St. Joseph Infirmary, where he died July 14, aged 75, of cerebral hemorrhage.

Robert Orton Moody, Berkeley, Calif.; born in Buffalo, N. Y., Oct. 18, 1864; Yale University School of Medicine, New Haven, Conn., 1894; joined the faculty of the University of California Medical School in 1901 and in 1935 retired with the rank of professor emeritus of anatomy; member of the American Microscopical Society and the American Association of Anatomists; fellow of the American Association for the Advancement of Science; in 1911 was honored with the title of Officer de L'Instruction Publique by the French government; died in the Alta Bates Hospital July 28, aged 83, of bronchopneumonia and arteriosclerotic heart disease.

James Ross Clemens, Webster Groves, Mo., born in St. Louis, Sept. 19, 1866; L.S.A., 1900, L.R.C.P., London and M.R.C.S., England, 1901; professor emeritus of pediatrics at St. Louis University School of Medicine; at one time dean at the Creighton University Medical College in Omaha; member of the American Medical Association; served during World War I; in 1935 winner of the prize for play offered by One-Act Theatre in London, England; in 1937 received second prize from the Oxford University Press for plays suitable for English schools; died in St. Mary's Hospital, St. Louis, July 18, aged 82, of heart disease.

John Barr McAlister † Harrisburg, Pa.; born in Carroll County, Md., Jan. 31, 1864; University of Pennsylvania Department of Medicine, Philadelphia, 1887; member of the House of Delegates of the American Medical Association in 1909, 1914, 1928 and 1931; fellow of the American College of Physicians; past president of the Medical Society of the State of Pennsylvania, Dauphin County Medical Society and the Harrisburg Academy of Medicine; for many years affiliated with Harrisburg Hospital; chairman of the board of trustees of the Gettysburg (Pa.) College; died July 22, aged 84, of chronic nephritis and uremia.

Frederick William Krueger, Jacksonville, Fla.; born in Hille, Westphalia, Germany, Oct. 17, 1896; University of Nebraska College of Medicine, Omaha, 1926; served during World War I; member of the American Association of Industrial and Railway Surgeons and the Florida Association of Industrial and Railway Surgeons; on the staff of St. Luke's Hospital; a member of the visiting staffs of St. Vincent's, Brewster and Duval County hospitals; trustee, Newberry College, Newberry, S. C., and the Florida Naval Academy, St. Augustine; died July 6, aged 51, of acute coronary heart disease.

Harry Merrill Brown, Indianapolis; Indiana University School of Medicine, Indianapolis, 1939; member of the American Medical Association; served an internship and residency at the Indianapolis City Hospital; deputy coroner; a captain in the medical corps, Army of the United States, received the Bronze Star for performing outstanding services as chief of the eye, ear, nose and throat service in a hospital while a prisoner of war in Japanese Prison Camp No. 1, Cabanatuan, Philippine Islands during World War II; killed in an automobile accident, July 2, aged 33.

Eugene M. Austin, Tupper Lake, N. Y.; Albany (N. Y.) Medical College, 1887; member of the American Medical Association; for many years school physician and health officer; affiliated with the Mercy General Hospital, where he died July 21, aged 82, of multiple sclerosis, and fracture of the hip received when he fell out of bed.

Frederick Amos Baldwin, Kansas City, Mo.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; member of the American Medical Association; at one time on the faculty of the Baylor University College of Medicine in Dallas, Texas; died in the Research Hospital, July 13, aged 71, of uremia and prostatic hypertrophy.

Daniel Delos Comstock * Los Angeles; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1905; served as clinical professor of medicine at the College of Medical Evangelists; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; from 1910 to 1917 superintendent of the Glendale (Calif.) Sanitarium and Hospital; on the staffs of the White Memorial and Los Angeles County General hospitals; died in Oakland, Md., July 30, aged 68, of coronary thrombosis.

Edwin Joseph Cornish, Dunsmuir, Calif.; Rush Medical College, Chicago, 1902; formerly affiliated with Dunsmuir Hospital; died in Southern Pacific Hospital, San Francisco, July 22, aged 73, of carcinoma of the prostate.

Hoagland Cook Davis * Baltimore; North Carolina Medical College, Charlotte, 1901; University of Maryland School of Medicine, Baltimore, 1902; fellow of the American College of Surgeons; served on the faculty of the Johns Hopkins University School of Medicine; affiliated with the John Hopkins Hospital, Sydenham Hospital, Hospital for Women of Maryland, Union Memorial Hospital, Bon Secours Hospital and the Church Home and Infirmary; died July 31, aged 69, of carcinoma.

William Insko Dean * Rochester, N. Y.; University of Buffalo School of Medicine, 1902; past president of the Monroe County Medical Society; fellow of the American College of Surgeons; veteran of the Spanish-American War; on an examining board during World War I; affiliated with the Highland Hospital, Iola-Monroe County Tuberculosis Sanatorium, Monroe County Hospital and the Rochester State Hospital; physician for the Rochester Police Department; died July 18, aged 71, of cerebral hemorrhage.

John Leonard Edmondson, Stella, Mo.; University Medical College of Kansas City, 1909; member of the American Medical Association; died in O'Reilly Veterans Administration Hospital in Springfield, July 22, aged 64, of a fungous infection.

Emile Ehler, Water Proof, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1904; died July 16, aged 69, of injuries received in an automobile accident.

Anthony William Ferrara, Callicoon Center, N. Y.; University of Vermont College of Medicine, Burlington, 1925; died July 31, aged 51, of coronary thrombosis.

Aaron Billings Gates, Greenwich, Conn.; Long Island College Hospital, Brooklyn, 1912; member of the American Medical Association and the American Society of Anesthesiologists; for many years affiliated with Greenwich Hospital; died July 9, aged 66, of coronary thrombosis.

Antonio Giorgi * Gary, Ind. (licensed in Indiana in 1911); served as a member of the board of the Central State Hospital in Indianapolis; died July 30, aged 85, of coronary occlusion.

James Goodfriend, St. Louis; Northwestern University Medical School, Chicago, 1940; interned at the Michael Reese Hospital in Chicago, where he served a residency in pediatrics; formerly a resident in pediatrics at the Cook County Hospital in Chicago; instructor in pediatrics at the Washington University School of Medicine; specialist certified by the American Board of Pediatrics; served during World War II; on the staff of St. Louis Children's Hospital; died July 5, aged 34, of heart disease.

William Augustus Harris, Savannah, Ga.; College of Physicians and Surgeons, Boston, 1905; served during World War I; superintendent of the Charity Hospital; died July 21, aged 70.

Calvin McCoy Harrison, Dallas, Texas; University of Louisville (Ky.) Medical Department, 1885; died June 6, aged 88, of coronary insufficiency.

Vernon Garold Jeurink * Denver; University of Colorado School of Medicine, Denver, 1927; secretary of the American Proctologic Society, of which he was president-elect; fellow of the American College of Surgeons; specialist certified by the American Board of Surgery; affiliated with Children's Hospital, Denver General Hospital and St. Luke's Hospital, where he died July 6, aged 45, of bronchogenic carcinoma.

Walter Frederick Johnson * New York; Jefferson Medical College of Philadelphia, 1924; member of the Medical Society of the State of Pennsylvania; specialist certified by the American Board of Ophthalmology; on the staff of the New York Eye and Ear Infirmary; died July 13, aged 49, of coronary sclerosis.

Thomas Alfred Jones, Menard, Ill.; Marion-Sims College of Medicine, St. Louis, 1897; member of the American Medical Association; served as superintendent of the general hospital and head of the medical department of the Southern Illinois Penitentiary; died in Evanston, July 3, aged 79, of carcinoma of the sigmoid.

Harry Katz, New York; University of Illinois College of Medicine, Chicago, 1916; served during World War I; died in Michael Reese Hospital, Chicago, July 20, aged 54, of lymphosarcoma and pneumonia.

Robert Floyd Lamberton * Denver; Cleveland Homeopathic Medical College, 1903; an Affiliate Fellow of the American Medical Association; served during World War I; died in St. Joseph's Hospital July 12, aged 69, of carcinoma of the prostate.

Alfred Joseph Mascia, New York; Columbia University College of Physicians and Surgeons, New York, 1945; interned at Morrisania City Hospital; certified by the National Board of Medical Examiners; entered the medical corps, Army of the United States, in April 1947 as a first lieutenant; service terminated in December 1947 with the rank of captain; died July 18, aged 27.

William Houston Moore * Wilmington, N. C.; Jefferson Medical College of Philadelphia, 1910; past president and for many years a member of the state board of medical examiners; past president of the New Hanover County Medical Society; served as councilor of the Third District of the Medical Society of the State of North Carolina; member of the city planning board; for many years a member of the city-county consolidated board of health; affiliated with the James Walker Memorial Hospital; died July 23, aged 68, of heart disease.

James A. Morford, Grantsville, W. Va.; University of Louisville (Ky.) Medical Department, 1909; county health officer; served as a member of the Calhoun County Court and one term as a member of the West Virginia House of Delegates from Calhoun County; member of the board of directors of the Calhoun County Bank; died July 21, aged 67, of circulatory failure, secondary to cerebral hemorrhage.

Victor Campbell Myers, Lansing, Mich.; Creighton University School of Medicine, Omaha, 1940; assistant director, Bureau of Industrial Health, Michigan Department of Health; killed July 30, aged 34, in an automobile accident.

Gussie Annice Niles, Salem, Ore.; University of Oregon Medical School, Portland, 1935; member of the American Medical Association; secretary of the Marion-Polk Counties Medical Society; affiliated with the Salem Deaconess Hospital; died July 9, aged 52, of cerebral hemorrhage.

Major Norvel Pannell, Philadelphia; College of Physicians and Surgeons, Boston, 1906; for many years affiliated with the Frederick Douglass Memorial Hospital; on the staff of Phipps Institute; died July 8, aged 70, of endocarditis.

Frank Adrian Pearl, Los Angeles; Howard University College of Medicine, Washington, D. C., 1912; served during World War I; died July 24, aged 61, of cerebral thrombosis.

Bruce Reed Pearson, Salt Lake City; Stanford University School of Medicine, San Francisco, 1932; member of the American Medical Association; specialist certified by the American Board of Internal Medicine; served during World War II; on the staff of St. Mark's Hospital; died July 16, aged 44, of heart disease.

Earl Fray Peinert * Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1916; served overseas during World War I; for many years affiliated with St. Francis Hospital and Grant Hospital, where he died July 8, aged 57, of arteriosclerotic heart disease.

John Lee Riley, Snow Hill, Md.; University of Maryland School of Medicine, Baltimore, 1905; served as a member of the county board of education, as county jail physician and deputy medical examiner for Worcester County; a medical examiner for the Selective Service during world wars I and II; formerly a member of the board of medical examiners; president and director of the First National Bank and for many years director of the Snow Hill Building and Loan Association; died July 24, aged 73, of carcinoma of the colon.

Charles Wallace Sale * Colonel, U. S. Army, retired, Fredericksburg, Va.; University College of Medicine, Richmond, 1907; fellow of the American College of Physicians; in September 1917 entered the medical corps of the U. S. Army as a first lieutenant; promoted through the various ranks; in August 1937 became a lieutenant colonel and in August 1943 a colonel; served during world wars I and II; retired May 31, 1946 for disability in line of duty; died in the Mary Washington Hospital July 9, aged 63, of cerebral hemorrhage.

Clyde Wilfred Sample, Wilkensburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1903; served during World War I; on the staffs of Homeopathic Hospital and Shadyside Hospital, where he died July 19, aged 70, of coronary occlusion.

Harry Edward Schilling, Cincinnati; Miami Medical College, Cincinnati, 1909; died July 4, aged 74.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 25, 1948.

British Commonwealth Medical Conference

Doctors from all parts of the British Commonwealth met at the House of the British Medical Association to discuss the formation of a British Commonwealth Conference. Most of them had attended the meeting of the World Medical Association at Geneva, but the proposed conference is in no way an offshoot of this. There is already a close medical connection between Britain and the Dominions. From the most distant parts doctors come here for postgraduate training. The Dominions have branches of the British Medical Association or form national medical associations affiliated with it. But these connections have grown up spontaneously, without any attempt being made to incorporate the various bodies into one organization. For two days the means of promoting greater cooperation were discussed by representatives of the national medical associations of Australia, Canada, Ceylon, Eire, Great Britain, India, New Zealand, Pakistan, South Africa and Southern Rhodesia. It is proposed that an annual conference of representatives of national medical associations be held in conjunction, when possible, with the annual meeting of the association of the host country. It is proposed that the conference should last three days and that two representatives from each country should attend. The first meeting is to be held at Saskatoon, Canada, in June 1949, to be presided over by Dr. J. F. C. Anderson, president-elect of the Canadian Medical Association. In 1950 it is hoped that the conference will be held in Brisbane, Australia, and in 1951 in South Africa.

The inclusion of India and Pakistan in the conference is particularly interesting. They have exercised the option given to them to become independent, instead of a Dominion, of the British Commonwealth. But they owe modern medicine entirely to Britain, which established medical schools where 60,000 Indian graduates have been trained. At international conferences the fluent command of the English language by Indians has been noteworthy. They come to Britain in increasing numbers for postgraduate instruction. India may feel satisfaction at her political independence, but for modern culture she remains dependent on Britain. Nowhere is this more obvious than in the case of medicine. She continues to publish medical journals in English. If, as some imagine, the English language is destined in time to become the language of the world, it is exhilarating to think that medicine will play no small part in its diffusion and in the cementing of international relations.

Unexplained Deaths While Bathing

A doctor wrote to the *Lancet* (2:312 [Aug. 21] 1948) a letter giving his experience as an explanation of some of the unexpected deaths which occur during bathing. While in his bath he felt as if he were suddenly cut nearly in two by something from behind. For ten minutes he lay in the bath paralyzed and nearly fainting with pain. Had he been in deep water he certainly would have died. This letter evoked one from Dr. F. Parkes Weber, a well known authority on rare diseases, who gave a very different explanation of such deaths (*Lancet* 2:396 [Sept. 4] 1948). He said that there has often been uncertainty about the cause of deaths while bathing and that those who have recovered from an attack which apparently would have been fatal, had it occurred while swimming in deep water, can help to throw light on the subject, as the preceding correspondent has done. He cites the personal experience of a

German writer, Dr. J. P. zum Busch, which suggests that a kind of giant urticaria and faintness following immersion in cold water may be explained by the release of a histamine-like substance in the skin and subcutaneous tissue, which, if too much gets into the general circulation, may cause fainting. He refers to the teaching of Langdon-Brown: "Every known protein contains histidine. Break off a single carbon dioxide molecule from this histidine and it becomes a powerfully toxic substance, histamine. This substance when liberated from the tissue cells can produce all the phenomena of allergy." Histamine applied to the skin promptly raises an urticarial wheal. Injected subcutaneously into animals it produces a condition like anaphylactic shock. But the problem remains how a substance toxic to all becomes liberated in the tissues of some in answer to stimuli quite harmless to every one else.

Damages for Meningitis Following Spinal Anesthesia

In April of last year the High Court awarded damages of \$48,000 to a young man who contracted meningitis after a spinal injection of nupercaine hydrochloride and was left with permanent paralysis of both legs and incontinence of urine. The damages were given against the Portsmouth Corporation, in whose hospital the operation took place, but a simultaneous claim against the practitioners concerned was not granted. The corporation appealed against the verdict on the grounds that the judge had disregarded the evidence that infection with *Pseudomonas pyocyanea* could have occurred in spite of proper precautions to prevent this.

Giving judgment in the Court of Appeal, Lord Justice Bucknill said that there was sufficient evidence that the plaintiff's injury was due to an injection of nupercaine hydrochloride into the spinal canal. This introduced a bacillus which caused meningitis. The disease was due to negligence and breach of duty by the corporation's servants in failing to carry out proper antiseptic precautions. There was no satisfactory evidence that the syringe had been sterilized in accordance with the usual practice obtaining in the hospital. He therefore dismissed the appeal.

THE NETHERLANDS

(From Our Regular Correspondent)

Sept. 27, 1948.

Historic Days

The Dutch medical journals reflect the historic events of these days: Queen Wilhelmina's jubilee, Her Majesty's abdication and the inauguration of Queen Juliana. They gratefully remember the warm interest shown by the members of the royal family in public health and medical care.

Editorials point out that during the reign of Queen Wilhelmina the population nearly doubled and the general mortality, tuberculosis and infant mortality were among the lowest of the world.

Professor Van Loghem, chief editor of the leading Dutch medical journal, the *Nederlandsch Tijdschrift voor Geneeskunde*, emphasizes that public health is the outcome of many forces: the average standard of living in Holland has very much improved, especially since World War I; illiteracy gradually disappeared; as a result of social insurance against invalidism, illness, accidents, unemployment, pauperism and intemperance ceased to be problems; before the war the standard of housing became rather high; there was a rapid development in the field of industrial hygiene, and the "Cross-Societies" did excellent work for the organization of medical prevention.

In Holland tuberculosis mortality showed itself an exceedingly sensitive reactor to prosperity, especially nutrition. Even during World War I, when the Netherlands did not suffer from hostilities, the number of cases of tuberculosis increased because of the relative scarcity of food.

The figures of infant mortality in Holland were remarkably low before World War II. In fifty years they had come down from 16 to 3.4 per cent (1939). During the first years of the war they did not react to war conditions; even in the impoverished Dutch family the baby was safe. During the terrible winter of 1944-1945 there was a sharp increase in infant mortality; but, even at its height, it remained far below the average of fifty years ago.

In these historic days the improvement of health in the Dutch Indies during half a century of Dutch colonial government is mentioned more than once. During the week of festivities the Indian (formerly Colonial) Institute in Amsterdam—itsself a center of scientific activities—organized a large meeting of scientific workers in the colonial field.

Professor Swellengrebel, malariologist, gave an impressive sketch of the development of tropical hygiene, sanitary organization and medical care on Sumatra and Java. The cause of beriberi was discovered by Eijkman in the Institute of Pathology in Batavia, and in the same Institute Grijns founded vitaminology. The campaigns against smallpox, plague, malaria, ancylostomiasis and yaws are internationally recognized as object lessons in epidemiology. The hygienic experiences and experiments in the tobacco and rubber plantations on Sumatra eliminated the tropical climate as a factor of disease and proved that even a collectivity of Chinese coolies may reach an European level of public health.

Professor Swellengrebel also mentioned the development of Javanese colonizations on Sumatra before the war. Their sanitary conditions had reached a high European standard. Not only were they characterized by good hospitals and special measures against special diseases, but they were also provided with all that was necessary for hygienic environment (housing, drinking water, sewage and food) and submitted to a system of medical prevention (including antenatal care, baby clinics, compulsory treatment of school children).

At the same time the Civil Medical Service was reorganized as a Public Health Service by Dr. De Vogel. The new organization decentralized medical care, and exploration and prevention were the first items on its central program.

PARIS

(From Our Regular Correspondent)

Sept. 22, 1948.

The Point of View of Forensic Doctors

At the Lausanne International Congress for legal medicine last May, as a consequence of a communication of Professors Delay and Desclaux, a commission was appointed and has proposed to this society the following resolution: "That the use of methods of investigation of the subconscious, such as pharmacodynamic explorations with pentothal, be, in principle, authorized in legal medicine, with a purely medical aim and as a mean of diagnosis. But the expert shall not take into consideration the revelation obtained on the materiality of facts under the influence of those substances. In this manner, the establishment of the responsibility will not, in any case, be based on this examination only, the interpretation of which demands a critical analysis by the expert doctor. Moreover it is recommended to make use of these methods only when current means of investigation have failed." Professors C. Richet and H. Desoille, commissioned by the General Assembly of deported and interned doctors of the Resistance, have given another opinion to the Society for Legal Medicine. They declared as inadmissible the exploration of the subconscious of an accused, whom the French law presumes to be innocent, with the help of pharmacodynamic means of the pentothal sodium® type. They protested against such methods in the name of their comrades who fought for individual liberty and who were subjected to the Gestapo methods of interrogation.

Franco-British Convention on Social Security

Mr. J. Griffiths, British Minister for Social Insurances, and Mr. Daniel Mayer, French Minister for Labor, signed on June 11 a convention establishing the reciprocity of the social security services between Great Britain and France. As from July 5, all contributions paid either in France or in Great Britain are taken into account in the other country, and will permit the patient to receive allowances for illness, inability to work, maternity and occupational accidents; it entitles him, according to cases, to a superannuation or widowhood pension, and this either in France or in England. Up to the present, when a British laborer came to work in France, or inversely, he lost the rights acquired in his original country by the contributions paid to the respective social insurance fund. As to the superannuation pension, and according to the new convention, each of the two countries will be responsible for the payment of a part of the pension in proportion to the period during which contributions shall have been paid to its own insurance system. The convention comprises special provisions for British officials on duty in France and vice versa.

BRAZIL

(From Our Regular Correspondent)

SÃO PAULO, Oct. 4, 1948.

Study of 1,000 Cases of Dementia Paralytica

The first group of patients with dementia paralytica admitted to the Hospital Juqueri, a state hospital near São Paulo, was studied by Drs. Cyriaco Amaral Filho and Waldemar Cardoso. The average age at the time of infection was 23 years and 3 months and at the onset of dementia paralytica was about 38 years and 5 months. The incubation period among 373 known cases varied from five to twenty years; the average incubation period was fourteen years and five months. The older the patient at the time of infection the earlier was the onset of the dementia paralytica.

In treatment, *Plasmodium vivax* was used, administered intravenously. Receptivity to *P. vivax* was about 90.0 per cent among whites, 76.3 per cent among mulattoes and 30.4 per cent among Negroes. The incidence of improvement following treatment was about 36.0 per cent, recorded as follows: complete recovery, 14.1 per cent; social recovery, 13.0 per cent, and improvement, 8.7 per cent. The total mortality rate with malaria therapy was 10 per cent; in prodromal cases, the minimal rate of 1.8 per cent was found, the major incidence occurring in the confusional variety with 15.8 per cent of deaths.

The results of treatment with malaria were better when the duration of the illness had been short. Thus, prodromal cases reached the remarkable rate of 81.0 per cent of recoveries; in patients ill less than six months, the total incidence of recoveries was about 50.0 per cent. The expansive form of the disease showed the best results, while the confusional form was less affected by treatment.

Negroes were the least benefited by malaria treatment, which is due to their natural immunity against infection with *P. vivax*. Their incidence of recoveries did not exceed 20.0 per cent, while that of white patients reached 41.0 per cent. The therapeutic results were best after 11 to 13 paroxysms. Patients who were uninfluenced by malaria were then treated with pyrethotherapy, with an incidence of 30.0 per cent of good results. Pyrethotherapy was also carried out in cases in which malaria inoculation failed to induce a sufficient number of paroxysms. Normal cerebrospinal fluid was found in 1.0 per cent of 514 cases studied. The coincidence of a positive Wassermann reaction in both the cerebrospinal fluid and the blood serum was found in 95.3 per cent. Reversal to normal cerebrospinal fluid reactions occurred only after one year of treatment, while clinical improvement was evident after a few months of treatment. The total incidence of deaths was about 53.0 per cent, one half of which occurred within the first six months after admission.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Federal Court Jurisdiction Over Matters Already Determined by State Court.—The New Jersey chiropractic association, and an individual chiropractor, and the New Jersey naturopathic society, and an individual naturopath, in two separate suits against the state board of medical examiners and the Attorney General of New Jersey, sought to have a declaratory judgment entered adjudicating as unconstitutional certain portions of the New Jersey medical practice act. The plaintiffs also sought a temporary injunction to stay certain criminal proceedings against the individual plaintiffs until the issues were determined and asked that a three judge court be convened to enter the temporary injunction. The defendants moved to set aside the service of the summons and the complaints and to dismiss each of the causes thereof. A consolidated argument on behalf of all plaintiffs was reduced to one brief, the defendants filed a brief covering both cases and the plaintiffs submitted a consolidated reply brief. The motion was argued in the district court, D., New Jersey.

Stripped to their essentials, the court said, the allegations of the plaintiffs resolve themselves primarily into the following constitutional issues in which the plaintiffs challenge: (1) the right of the State of New Jersey to define the scope of what constitutes the practice of medicine in the manner in which it has done so, (2) the right of the State of New Jersey to control the practice of medicine by means of its licensing system, (3) the right of the State of New Jersey to determine the accreditation to and the regulation of the schools located within its boundaries concerned with instruction in the healing arts, (4) the right of the State of New Jersey to authorize its state board of medical examiners, in the manner in which it has done so, to establish the standards by which schools instructing in the healing arts will be accredited, applicants for licenses to practice the healing arts are to be rated and to initiate legal actions on behalf of the state if such regulations as established by the state board are violated and (5) the right of the State of New Jersey to try alleged violators of statutes and regulations so established without a jury.

In the absence of diversity of citizenship, said the court, it is essential that a substantial federal question be presented in order to give the federal court jurisdiction. This court is therefore confronted with the necessity in this case of determining whether the plaintiffs have raised a substantial question under the federal constitution which has not been ruled on by the United States Supreme Court, since no diversity of citizenship exists.

Decisions of the United States Supreme Court involving the same or sufficiently analogous questions as those raised by the plaintiffs in this case were then cited and discussed in some detail, and the court decided that in the light of such decisions the plaintiff's attack on the New Jersey medical practice act appears to raise no substantial question that their rights under the federal constitution are being violated. Furthermore, the court said that the State of New Jersey had established direct, positive and definite standards for the practice of medicine and the allied healing arts consistent with its police power as a state.

The plaintiffs contended that by virtue of the decision in a prior New Jersey case (*State Board of Medical Examiners v. Grossman*, 52 A. (2d) 699), interpreting the general clauses of the medical practice act denying the right to trial by jury, the State of New Jersey has deprived them of their right to trial by jury under the federal constitution. The cases cited by the plaintiffs, said the court, are inapplicable, since they refer to the right to trial by jury in federal courts where federal statutes or rules of court are involved. Where the right is invoked under a constitutional statute of a state, the court continued, it has been ruled that trial by jury may be modified by a state or abolished altogether. Again, said the court, the plaintiffs have failed to present a substantial federal question

for consideration of the court because prior decisions of the United States Supreme Court have foreclosed this subject.

The plaintiffs next attacked the New Jersey medical school licensing act which provides (N.J.S.A. 18:20-18), "No school or college shall be conducted within this state for the purpose of training or qualifying students to practice medicine or surgery or any branch thereof or any method of treatment of disease or any abnormal physical condition without first securing from the state board of medical examiners a license authorizing it so to do." This act, the plaintiffs insisted, is unconstitutional because "no schools for naturopaths or chiropractors may be maintained in the State of New Jersey. . . . They alleged that a school for instruction in chiropractic was attempted to be organized but that it had been closed as a result of activities on the part of the authorities of the State of New Jersey. They insisted that it is the right of the people of the state to be given the opportunity to study the sciences of naturopathy and chiropractic and that, since such schools are private in nature, the state has no power to interfere with such schools. On the basis of prior cases, said the court, it appears abundantly clear that a state may set reasonable standards by way of educational requirements, examinations, etc., for the determination of the qualifications of those who hold themselves out to the public as practitioners of any form of treatment of disease or abnormal physical condition. Furthermore, a state has the right to grant to an administrative body the authority to regulate those standards fixed by the statute. If it is a fact that the standards set by the State of New Jersey have so far deterred the establishment of schools for chiropractic and naturopathy, as alleged by the plaintiffs, it is equally true that no group in the field of medicine and surgery has satisfied the statute for no such college or school exists in this state. In any event, said the court, the pleadings contain no allegations that any of the plaintiffs have applied for a license to establish a school and have been denied such a permit.

There remains then for determination, continued the court, whether the complaints allege facts to constitute a cause of action under the civil rights statute. To warrant a cause of action under this statute there must be allegations of a violation or denial, under color of "any statute, ordinance, regulation, custom, or usage," of some right granted by the federal constitution. Have the defendants acted in an unconstitutional manner or have they administered the medical practice act or the medical school licensing act in an unconstitutional manner? That the arts of chiropractic and naturopathy involve the practice of certain forms of treatment of some disease or abnormalities, organic or functional, of the human body is not contested by the plaintiffs. They assert, however, that it is unnecessary in their practice to qualify themselves in such subjects as surgery, materia medica, etc., as the statute and regulations of New Jersey now generally require of all who would practice "any method of treatment of human ailment, disease, pain, injury, deformity, mental or physical condition." They contend that their form of practice should be recognized apart from the general practice of medicine and surgery and that the failure of such recognition constitutes discrimination against them which oppressively deprives them of their right to exercise freedom in offering to administer their forms of therapy to the public. The State of New Jersey through its agencies, said the court, has deemed it appropriate that everyone who desires to practice "any method of treatment of human ailment, disease, pain, injury, deformity, mental or physical condition" shall be confronted with uniform requirements regardless of what forms of therapy, he proposes to administer. There is no showing that the laws and regulations or the administration thereof have been bent to adversely affect the right of the plaintiffs in these cases or the classes some of them hold themselves out to represent. In fact, said the court, in all their details with regard to the prosecution of the individual plaintiffs, the allegations of the complaints fail to show that the defendants have acted other than they are required, if they are to properly execute the mandates of the laws and regulations they are bound to administer. As a result there is left no valid charge of purposeful or intentional discrimination and the causes of action under the civil right statute must fall.

Furthermore, the court concluded, the plaintiffs may not convert this federal court into an appellate forum to pass on the merits of legislation rather than to contest such controversies in the state court system with appeal directly to the United States Supreme Court. The federal courts are without jurisdiction to try alleged criminal violations of state statutes. The state courts are the final arbiters of their meaning and appropriate application, subject only to review by this court if such construction or application is appropriately challenged on constitutional grounds.

For the lack of a substantial constitutional question warranting exercise of jurisdiction and failure to state a cause of action or justifiable controversy within the jurisdiction of the court, the motions for a three judge court and for temporary injunctions to stay proceedings in the state court were denied and the plaintiff's complaints dismissed.—*New Jersey Chiropractic Association et al. v. State Board of Medical Examiners; New Jersey Naturopathic Society, et al. v. Same (2 cases) (1948) 79 F. Supp. 327.*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various Centers, Feb., June and Sept. 1949. *Part II.* April, 1949. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th St., Philadelphia 2, Pa. *Part III.* Boston & New York, Nov. 9-11, Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 17, 1949. Final date for filing application is May 1. *Oral.* Philadelphia, Nov. 3-5, 1948; San Francisco, date not set. Candidates not eligible for the orals cannot be promised a place in 1949. Sec., Dr. W. A. Werrell, 1 W. Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 1949. Final date for filing application is Jan. 1949. Sec., Dr. W. J. German, 310 Cedar Street, New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* Various Centers, Feb. 4, 1949. Final date for filing application is Nov. 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 1.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Jan. 14. *Oral.* San Francisco, March 21-24; New York, June 11-15; St. Louis, Oct. 15-19; Boston, Dec. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: *Part I.* Various Centers, April & May. Final date for filing application is Dec. 31. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Atlantic City, Nov. 17-19. Sec., Dr. Lee F. Hill, 718 Royal Union Bldg., Des Moines, Iowa.

AMERICAN BOARD OF PHYSICAL MEDICINE: Atlantic City, June 4-5. Final date for filing application is March 15. Sec., Dr. R. L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in June and November of each year in the home town of applicants. Sec., Treas., Dr. Louis T. Byars, 400 Metropolitan Bldg., St. Louis, Mo.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1949. Final date for filing application is Dec. 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: Feb. 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 18, Minn.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 28-30, 1949. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery.

ARKANSAS: * Little Rock, Nov. 4-5. Sec., Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Eclectic Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St. Little Rock.

CALIFORNIA: *Oral.* Los Angeles, Nov. 20-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * Denver, Jan. 4-7. Final date for filing application is Dec. 18. Sec.-Treas., Dr. W. W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * *Examination.* Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic Examination.* Derby, Nov. 9-10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DELAWARE: *Examination.* Dover, Jan. 11-13. *Endorsement.* Jan. 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA: * *Examination.* Jacksonville, Nov. 28-30. Sec., Dr. Frank D. Gray, 12 N. Rosalind Ave., Orlando.

GUAM: *Endorsement.* Agaña, Last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O. San Francisco, Calif.

HAWAII: *Examination.* Honolulu, Jan. 10-13. Sec., Dr. S. E. Doolittle, 881 S. Hotel St., Honolulu 53.

IDAHO: Boise, Jan. 10-12. Dir., Bureau of Occupational Licenses, Miss Estella S. Mulliner, State House, Boise.

INDIANAPOLIS, June 1949. Sec., Board of Medicine, Dr. Paul R. Tindall, 416 K. of P. Bldg.,

IOWA: * *Examination.* Des Moines, Dec. 6-8. *Endorsement.* Des Moines, Dec. 6. Sec., Dr. M. A. Royal, 506 Fleming Bldg., Des Moines.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination.* Louisville, Dec. 13-15. Sec., Dr. Bruce Underwood, 620 S. 3rd St., Louisville 2.

LOUISIANA: *Examination.* New Orleans, Dec. Sec.-Treas., Dr. R. B. Harrison, 1507 Ithieria Bank Bldg., New Orleans 12. *Homeopathic Examination.* Baton Rouge, subject to call. Sec., Dr. F. H. Hardenstein, 715 Pere Marquette Bldg., New Orleans.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination.* Baltimore, Dec. 7-8. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. G. L. Schadt, 413 E. State House, Boston.

MISSISSIPPI: *Reciprocity.* Jackson, Dec. 6. Exec. Officer, State Board of Health, Dr. Felix J. Underwood, Jackson.

MISSOURI: St. Louis, Oct. 25-27. Exec. Sec., Mr. John A. Hailey, P.O. Box 4, Jefferson City, Mo.

NEBRASKA: * *Examination.* Omaha, June. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Building, Lincoln 9.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW HAMPSHIRE: Concord, March 10. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW YORK: *Examination.* Various Centers, Feb. 1-4. Sec., Dr. J. L. Lochner, Jr., 23 S. Pearl St., Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* Wilson, Oct. 25. Sec., Dr. Ivan M. Procter, 226 Hillshoro St., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 4-7. Act. Sec., Dr. C. J. Gaspel, Grafton.

OHIO: *Examination.* Columbus, Dec. 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: * *Reciprocity.* Oklahoma City, Oct. 24-25. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

SOUTH CAROLINA: *Endorsement.* Dec. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 13-19. Sec., Dr. G. J. Van Heuvelen, Capitol Bldg., Pierre.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, Medical Arts Bldg., Fort Worth.

UTAH: *Examination.* Salt Lake City, July. Sec., Dept. of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

VERMONT: *Examination.* Burlington, Feb. Sec., Dr. F. J. Lawliss, Richford.

VIRGIN ISLANDS: *Examination.* Charlotte Amalie, Dec. 8-9. Comm., Dr. Christian R. Moorhead, Charlotte Amalie.

VIRGINIA: *Examination.* Richmond, Dec. 3-4. *Endorsement.* Dec. 2. Sec., Dr. K. D. Graves, 30 1/2 Franklin Road, Roanoke.

WASHINGTON: * Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, Dec. 21. Sec., Mr. Francis A. Roy, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Dec. 1-2. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

FLORIDA: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.

MICHIGAN: *Examination.* Ann Arbor & Detroit, Jan. 14-15. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: *Examination.* Jan., April, June and Oct. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.

NEW MEXICO: *Examination.* Santa Fe, Nov. 7. Sec., Miss Marguerite Kilkenny, 110 W. Houghton St., Santa Fe.

OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Dec. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: *Examination.* Memphis, Dec. 30-31. Sec., Dr. O. W. Hyman, 874 Union Avenue, Memphis 3.

WASHINGTON: Seattle, Jan. Sec., Dept. of Licenses, Miss Virginia Witherspoon, Olympia.

WISCONSIN: *Examination.* Milwaukee, Dec. 4. Final date for filing application is Nov. 27. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, New York 38:761-914 (June) 1948. Partial Index

- Air Pollution: Report of Committee on Air Pollution. H. A. Whittaker. —p. 761.
- Sanitary Ventilation. W. F. Wells. —p. 775.
- *Q Fever in Los Angeles County: Description of Some of Its Epidemiologic Features. C. C. Shepard and R. J. Huebner. —p. 781.
- Relative Efficiency of Open and Confidential Method of Reporting Causes of Death. P. H. Jacobson. —p. 789.
- Selecting Public Health Personnel Through Examining Processes. Dorothy Deming. —p. 808.
- Beginnings of Mental Health Program in State and Local Department of Health. K. A. Zimmerman. —p. 811.
- Simple Goiter in Colombia: H. Parra. —p. 820.
- Budgets and Expenditures for Dentistry from Maternal and Child Health Funds. J. T. Fulton. —p. 825.
- Mass Control of Dental Caries Through Use of Domestic Water Supplies Containing Fluorine. F. S. McKay. —p. 828.
- Proposed Report on Educational Qualifications of Community Health Educators. Committee on Professional Education. W. P. Shepard. —p. 843.

Q Fever in Los Angeles County.—Referring to two previous outbreaks of Q fever in the United States, Shepard and Huebner say that infected cattle in Amarillo and infected calves or sheep in Chicago had been the source of human infection. Transmission to slaughter house workers had come from infected tissues and body fluids either by direct contact or by means of droplets of spattered fluids. Ticks had been rarely seen on animals in either of these locations and in Chicago cases developed not so much in workers handling hides, but rather in those coming in contact with viscera. Q fever has been found in an apparently endemic manner in the milk shed area of Los Angeles County. Most of the patients lived near or visited dairies. Serologic studies revealed that many persons who did not give histories of clinical attacks of Q fever showed complement-fixing antibodies for Q fever. Half of the dairy workers and people living near dairies showed specific antibodies. Of 130 samples of serum of cows in the area 21 showed antibodies for Q fever, some in high titer.

Archives of Otolaryngology, Chicago 47:113-238 (Feb.) 1948. Partial Index

- Some Clinical Phenomena of Deafness in Light of New and Old Tests of Ear. F. Kobrak. —p. 113.
- Progress in Esophagology. P. H. Holinger. —p. 119.
- Otolaryngologic Consultant in Compensation and Liability Actions. C. S. Nash. —p. 127.
- Management of Esophageal Strictures. C. C. Cody III. —p. 133.
- Penicillin and Streptomycin Aerosol in Treatment of Pulmonary Disease. E. W. Hagens, Mary Karp and C. J. Farmer. —p. 138.
- Detailed Audiogram. H. A. E. van Dishoeck and J. van Gool. —p. 149.
- Otolaryngologic Uses of Soluble Gauze (Oxidized Cellulose). F. D. Woodward and T. Holt. —p. 155.
- *Prophylactic Value of Sulfathiazole: Experiment Designed to Test Efficacy of Sulfathiazole Gum in Reducing Bacterial Flora Causing Infectious Pharyngitis. I. S. Neiman. —p. 158.
- *Acute Frontal Sinusitis. E. D. Johnson. —p. 165.
- Paranasal Sinuses. S. Salinger. —p. 189.

Efficacy of Sulfathiazole Gum in Reducing Bacterial Flora.—The subjects of the experiments reported by Neiman were 199 medical students, who were divided into three groups: Group A chewed one sulfathiazole gum tablet three times daily. Group B chewed one unmedicated gum tablet three times daily. Group C chewed one medicated gum tablet once daily. Each student was instructed to chew the gum tablet at least thirty minutes, preferably longer, before discarding it. Those chewing three a day were asked to chew the first tablet shortly after

arising in the morning, the second in the middle of the day and the third before retiring. Those in group C were asked to chew the one tablet shortly before retiring. A detailed record was kept of the incidence of common colds, irritational or secondary pharyngitis and infectious or primary pharyngitis. The author found a diminution in the incidence of primary streptococcal pharyngitis in persons chewing three sulfathiazole gum tablets daily. No cases of sensitization were revealed when sulfathiazole was administered locally in a gum vehicle, as determined by the so-called Leftwich test, nor were any reactions of hypersensitivity reported by the participants.

Acute Frontal Sinusitis.—According to Johnson acute frontal sinusitis is one of the most serious diseases with which the rhinologist has to cope, chiefly because of the serious complications that may develop. The most common one is osteomyelitis of the frontal bone; others are periorbital abscess, epidural abscess, subdural abscess, brain abscess and meningitis. Fortunately, frontal sinusitis is not common. Of the more than 50,000 patients seen in the outpatient department of the Los Angeles General Hospital because of diseases of ear, nose and throat, only 68 had frontal sinusitis requiring that they be hospitalized, and in only 6 of these did osteomyelitis develop. The most common causative factor of frontal sinusitis is infection of the upper respiratory tract; in 47 of the 68 cases studied this was true. In 1 case frontal sinusitis followed measles; in 1, "flu"; in 2 cases it resulted from angina, and in 1 case from allergy. In 7 cases it resulted from swimming, and in 8 cases the cause was undetermined. *Staphylococcus aureus* appears to be the predominating organism found in the cases of frontal sinusitis. Prominent symptoms are nasal stoppage and pain and tenderness over the frontal area. Local packs of heat or cold and nasal shrinkage may quickly abort the disease. However, the pain over the frontal sinus may become more intense, and swelling may occur, indicating a periosteal involvement. Pitting edema may occur over the frontal bone, extending to the hair line. It is definite then that the patient has osteomyelitis. Increased headache and rise of temperature indicate meningitis, epidural abscess, subdural abscess or brain abscess. Sulfadiazine and penicillin should be administered. If pain and tenderness persist, one should not hesitate to trephine the bone at Ewing's point. If after trephining there are headache and rise of temperature, one should immediately reopen the trephined area, enlarge it sufficiently to expose the inner table and make an opening through this table to uncover a possible epidural or subdural abscess. If penicillin and the sulfonamide drugs do not arrest the progress of osteomyelitis, heroic measures, such as removal of the frontal bone, are considered justified. The author presents 2 case histories.

Blood, New York 3:617-728 (June) 1948

- *Exogenous Hemochromatosis Resulting from Blood Transfusions. S. O. Schwartz and S. A. Blumenthal. —p. 617.
- Histochemical Methods Applied to Hematology. J. J. Rheingold and G. B. Wislocki. —p. 641.
- Clotting of Plasma and Silicone Surfaces. T. B. Patton, A. G. Ware and W. H. Seegers. —p. 656.
- Determination of Number of Erythrocytes, Volume of Packed Red Cells, Hemoglobin and Other Hematologic Standards in Mexico City (Altitude, 7,457 Feet). Study Made of 200 Healthy Persons. J. R. Gil and D. G. Teran. —p. 660.
- Demonstration and Characterization of the Anti-d Agglutinin and Antigen Predicted by Fisher and Race. S. Haberman, J. M. Hill, B. W. Everist and J. W. Davenport Jr. —p. 682.
- Rh Chromosome Frequencies in England. R. R. Race, A. E. Mourant, Sylvia D. Lawler and Ruth Sanger. —p. 689.
- Distribution of the Rh Types in São Paulo (Brazil). F. Ottensooser, C. S. Lacaz, H. C. Ferreira and O. Mellone. —p. 696.

Exogenous Hemochromatosis.—Schwartz and Blumenthal cite histories of 5 patients who died as a result of a variety of diseases, all characterized by severe anemia for which numerous transfusions had been given, and in all of whom hemochromatosis developed. Eight similar cases from the literature are summarized. It is postulated that hemochromatosis in these patients is the end result of the deposition and subsequently irritating action of the excess amounts of iron in the parenchyma.

matous tissues. The underlying anemia and the not infrequent transfusion reactions are thought to act as predisposing factors for the development of exogenous hemochromatosis. The authors discuss the clinical similarities and dissimilarities and the differences in pathogenesis between exogenous and endogenous hemochromatosis.

Bulletin of Johns Hopkins Hospital, Baltimore

82:583-642 (June) 1948. Partial Index

*Viruses and Virus-Like Agents as Causes of Cancer: Brief Recounting and Reflection. J. G. Kidd.—p. 583.

Physiologic Studies in Congenital Heart Disease: V. Circulation in Patients with Isolated Septal Defects. J. C. Handelsman, R. J. Bing, J. A. Campbell and H. E. Griswold.—p. 615.

Viruses as Causes of Cancer.—Kidd reviews the literature on viruses and virus-like agents in relation to cancer, pointing out that it has become widely accepted that further advances in knowledge about cancer will come largely from new discoveries in one or another of the fields of intracellular physiology, chief encouragement being derived from prospects in the study of growth as a phenomenon. During the past few years its causation has been explained theoretically by analogies drawn from a number of rather distant sources. For example, from the hypothesis that plasmagens are influential in determining the structure and behavior of tissue cells, a number of authors have advanced the supposition that aberrant forms of these conjectural entities may be responsible for cancer, while from the conception that mutant plastids cause variegational diseases and viruses in plants, and from the supposition that all tissue cells harbor ultramicroscopic symbionts analogous to the intracellular "bacteroids" of cockroaches, other authors in turn have assumed that anomalous forms of those entities may cause cancer, and still other essayists have put forth related formulations having points of orientation somewhat less discernible. All of this is mere hypothesis. It is quite conceivable that the viruses may prove increasingly useful as reagents for the study of intracellular processes, both normal and abnormal.

Gastroenterology, Baltimore

10:767-922 (May) 1948

Chronic Ulcerative Colitis. W. L. Palmer.—p. 767.

Prepyloric Spasm Simulating Gastric Malignancy. A. L. Cohn and R. L. Gold.—p. 782.

Significance of Weight Loss as Observed in Gastrointestinal Clinic. C. F. Baumeister and D. D. Darling.—p. 792.

*Peptic Ulcer of Esophagus with Severe Bleeding Controlled by Oxycel. K. B. Castleton and D. A. Dolowitz.—p. 797.

Clinical Use of Needle Biopsy of Liver. R. E. Koch and M. M. Karl.—p. 801.

*Diagnosis of Hemochromatosis by Means of Needle Biopsy of Liver. J. H. Topp and M. C. F. Lindert.—p. 813.

Vitamin A Metabolism in Liver Disease: II. Effect of Bile Acids and Lecithin. D. Adlersberg, Susan Kann, Alice P. Maurer and others.—p. 822.

Comparative Effects of Protein Hydrolysates and Amino Acid Mixtures on Intestinal Motility and Blood Sugar Levels After Rapid Intravenous Injection. A. Sokalchuk, D. Ellis, M. R. Wester and others.—p. 831.

Studies of Effect of Tetraethylammonium Chloride on Gastric Motor and Secretory Function in Patients with Duodenal Ulcers. H. S. Brown, E. L. Posey Jr. and E. E. Gambill.—p. 837.

Pancreatic Calculi. D. Court and N. M. Matheson.—p. 848.

Effects Produced by Perfusion of Jejunum with Histamine and Pilocarpine Stimulated Gastric Juice. J. T. Dameron and O. H. Wangenstein.—p. 859.

Observations on Duodenal Motility in Dogs with Special Reference to Activity During Vomiting. P. D. Mathur, J. H. Grindley and F. C. Mann.—p. 866.

Disappearance of Uropepsin Following Total Gastrectomy. D. C. Balfour Jr., F. W. Preston and J. L. Bollman.—p. 880.

Prepyloric Spasm Simulating Gastric Cancer.—According to Cohn and Gold persistent spasm of the prepyloric or antral region of the stomach occasionally causes difficulty in differentiation from cancer. This area is a common site for cancer as well as spasm. They present the histories of 8 patients in whom prepyloric spasm had to be differentiated from antral cancer. This was accomplished either by clinical observation or surgical exploration. In 4 cases, an organic lesion was demonstrable which could explain the confusing prepyloric spasm. In the first 2 cases, there was a benign gastric ulcer

high on the lesser curvature; in the third, a duodenal ulcer, and in the fourth, a malignant gastric ulcer high on the lesser curvature. In the other 4 cases no definite organic lesion was demonstrable to explain the prepyloric spasm simulating cancer. Psychogenic influences were deemed responsible. The authors stress that when a malignant lesion cannot be definitely excluded by all diagnostic aids, exploratory operation is indicated.

Peptic Ulcer of Esophagus.—Castleton and Dolowitz report the case of a man who began to have symptoms of stomach trouble in 1919. The present illness began on May 19, 1947, when he suddenly began to vomit blood. He continued to vomit large quantities of blood and pass numerous tarry stools. He was given several transfusions, but, despite these, each successive blood examination showed a lower hemoglobin and hematocrit reading. On the morning of May 22 he had a hemorrhage which almost exsanguinated him. At emergency surgical intervention no evidence of ulcer could be found. Three days after gastrectomy he was again taken to the operating room and an esophagoscopy was performed. An ulcer was found about 3 cm. from the cardiac orifice at a position of 11 o'clock. At the edge of this ulcer a fair-sized artery was seen spurting blood. A piece of "oxycel" was placed on the ulcer. The "oxycel" promptly turned black and the bleeding stopped. Another piece of "oxycel," rolled into a hollow tube, was inserted into the esophagus in such a manner that its tendency to unroll applied a gentle pressure to the original "oxycel" lying on the ulcer. The scope was then removed. About five weeks later esophagoscopy was again performed. The site of the ulcer was well healed with a small residual scar. The authors believe that local application of "oxycel" or some related substance may be used to control bleeding from esophageal varices as well as from ulcers.

Diagnosis of Hemochromatosis by Means of Needle Biopsy.—According to Topp and Lindert three measures are generally utilized when diagnosis of hemochromatosis is attempted: biopsy of the skin, the intracutaneous ferric chloride test and examination of the urinary sediment for hemosiderin granules in the desquamated tubular cells. In addition, more complicated procedures, such as the determination of blood iron levels and the percentage of iron retained in the body when an accurately calculated diet has been given, have been used. These tests have not been attended by uniformly positive results in known cases. Although the classical clinical features, pigmentation of the skin, enlargement of the liver, diabetes mellitus and genital hypoplasia, should suggest the condition, approximately 20 per cent of the cases lack one or more of these characteristics. One fifth of all the cases of hemochromatosis remain undiagnosed when these conventional methods are used. In an effort to obtain a greater percentage of correct diagnoses the authors employed needle biopsy of the liver in suspected instances. They report 6 cases of hemochromatosis diagnosed by this method. Liver biopsy is a reliable and uniformly accurate means of diagnosing hemochromatosis. This disease entity would be diagnosed more easily and more frequently, if this aid is utilized. Pathogenesis of this condition, as well as of other diseases of the liver, may be clarified by living tissue studies furnished by liver biopsy.

Illinois Medical Journal, Chicago

93:233-284 (May) 1948

Repair of Long Bone Defects with Massive Bone Grafts. C. Scuderi.—p. 249.

*Immunization of Children with Influenza Virus Vaccine: Clinical Observations. R. E. Dukes and J. B. Gillespie.—p. 252.

Rhinoplasty Combined with Reconstruction of Receded Chin. O. J. Becker.—p. 254.

Tuberculosis in the Mentally Ill and Defective. M. Pollack, H. Neuer and H. Goldschmidt.—p. 260.

Colonic Diverticula: Review of 234 Cases. F. C. Val Dez, C. S. Gilbert and W. Kash.—p. 269.

Further Clinical Experience with Dolophine. J. J. Jacoby, M. P. Woolf and H. M. Livingstone.—p. 272.

Tooth Pick Perforation of Ileum. F. J. Saletta and G. J. Rukstina.—p. 276.

Immunization of Children with Influenza Virus Vaccine.—Dukes and Gillespie immunized 100 children with influenza virus vaccine types A and B. In the vaccinated group 42 per cent were between 19 months and 6 years of age, 50 per

cent were between 6 and 10 years of age and 8 per cent were between 10 and 16 years of age. A group similar in number and age distribution served as controls. Immunization consisted of two injections of the vaccine, 0.5 cc. at each injection, and at intervals of one week. Smaller doses were given to 14 children. The incidence of influenza in the immunized and control groups was not unlike except for the youngest age group, in which incidence of influenza was much less frequent in the immunized children. The authors were impressed by the frequency of reactions from the injections and the incidence of rather severe reactions in the younger children. Perhaps a dosage of vaccine dependent on body weight, as with typhoid vaccine, would reduce the number and severity of reactions. Further studies of larger series of children are necessary to evaluate accurately the effectiveness of the vaccine and to determine proper immunizing doses.

Journal of Immunology, Baltimore

59:109-220 (June) 1948. Partial Index

- Characterization of "Enzymic" Action of Influenza Viruses on Human Red Cells. B. A. Briody.—p. 115.
Tolerance to Toxic Action of Somatic Antigens of Enteric Bacteria. H. R. Morgan.—p. 129.
Inactivation of Influenza Virus by Mercurials and Reactivation by Sodium Thioglycolate and BAL. M. Klein, J. H. Brewer, J. E. Perez and Beatrice Day.—p. 135.
Zone of Activity of Antibodies as Determined by Use of Radioactive Tracers; Zone of Activity of Nephritoxic Antikidney Serum. D. Pressman and G. Keighley.—p. 141.
Epidemic of Influenza A Due to Atypical Strain. Relationship of This Strain to Other Influenza Viruses. S. S. Kalter, O. D. Chapman, Doris A. Feeley and Shirley L. MacDowell.—p. 147.
Incidence of Neutralizing Antibodies for Type A and Type B Influenza Virus in Normal Infants and Children. A. S. Lazarus and R. E. Westfall.—p. 159.
Production of Anti-Haemophilus Influenzae Type b Rabbit Serum. F. D. Eaton, E. G. Gerwe and G. F. Leonard.—p. 165.
Destructive Action of Mouse and Rat Tumor Extracts on Red Blood Cells in Vitro. L. Gross.—p. 173.
Serial Passage of Hodgkin's Disease Tissue Extract in Chicken Eggs. W. L. Bostick.—p. 189.

Journal of International College of Surgeons, Chicago

11:131-242 (March-April) 1948. Partial Index

- Clinical and Physiologic Evaluation of Vagotomy in Treatment of Peptic Ulcer. I. F. Stein Jr. and K. A. Meyer.—p. 131.
Intervertebral Disk Syndrome. P. Lewin.—p. 137.
Endometriosis as Cause of Small Bowel Obstruction: Report of 3 Cases. E. L. Zander, V. D'Ingianni and E. L. Drewes.—p. 149.
Present Concepts in Management of Both Chronic and Acute Appendicitis with Report on 12,813 Consecutive Appendectomies. D. C. Collins.—p. 154.
Tourniquet Amputation. S. R. Maxeiner.—p. 171.
Preliminary Ileostomy as Important Aspect of Colon Surgery Based on Thirty Years of Clinical Experience. A. A. Strauss.—p. 178.
New Operation for Sliding Hernia. A. H. Iason.—p. 182.
Massive Resection Operation for Varicosities of Leg Without Massive Sclerosing Therapy. N. Garber.—p. 187.
Results with Medullary Nailing of Fractures of Femur. E. Hedri.—p. 191.
Intravenous Solutions: Facts and Fancies. L. Rademaker.—p. 194.
Twin Stitches: New Technic. R. Tauber.—p. 200.
Subphrenic Abscess. M. J. Rajanna.—p. 205.

Public Health Reports, Washington, D. C.

63:777-804 (June 11) 1948

- Nutrition Studies: II. Methods of Collecting Dietary Data. Miriam G. Eads and Alla P. Meredith.—p. 777.
Observations on Rats and Typhus Fever in San Antonio, Tex. D. E. Davis.—p. 783.
Studies of Acute Diarrheal Diseases. XX. Further Observations of Chemotherapy in Shigellosis; Efficacy of Streptomycin and Sulfacarzole. A. V. Hardy and S. P. Halbert.—p. 790.

Quart. Journal Studies on Alcohol, New Haven, Conn.

9:1-72 (June) 1948

- Some Sociologic Concomitants of Excessive Drinking as Revealed in the Life History of an Itinerant Inebriate. R. Straus.—p. 1.
Conditioned Reflex and Psychodynamic Equivalents in Alcohol Addiction. B. Freedman.—p. 53.
Research Project on the Etiology of Alcoholism. O. Diethelm.—p. 72.
Alcohol Problem and the Law. E. G. Baird.—p. 80.
Sociohistorical Survey of Alcoholics Anonymous. O. W. Ritchie.—p. 119.

Radiology, Syracuse, N. Y.

50:569-724 (May) 1948

- *Method of Roentgenologic Examination of Shoulder. W. E. Howes and B. B. Alicandri.—p. 569.
Chronic Idiopathic Hypertrophic Osteo-Arthropathy. J. D. Camp and R. L. Scanlan.—p. 581.
Roentgen Appearance of Ossifying Fibroma of Bone. R. S. Sherman and W. C. A. Sternbergh.—p. 595.
Importance of Intra-Alveolar Pressure in Diagnosis of Pulmonary Diseases. N. Westermark.—p. 610.
Bone and Joint Lesions in Leprosy: Radiologic Study. G. Esguerra-Gomez and Emilio Acosta.—p. 619.
Hydronephrosis: Radiologic Classification Based on Anatomic Variations. S. A. Robins and J. Fischmann.—p. 632.
Effective Compression in Excretory Pyelography. H. R. Zatzkin.—p. 639.
Further Observations on Use of Three-Million-Volt Roentgen Therapy. R. Dresser.—p. 645.
Physical Basis for High Skin Tolerance of Supervoltage Roentgen Rays. J. G. Trump.—p. 649.
Venous Calcification in Banti's Syndrome: Report of Case. A. R. Bleich and C. S. Kipen.—p. 657.
Malignant Plasmocytoma of Nasopharynx: Case of Multiple Myeloma Primary in Nasopharynx. M. M. Greenfield.—p. 661.
Prenatal Estimation of Birth Weight by Pelviccephalometry. S. W. Donaldson and W. D. Cheney.—p. 666.

SYMPOSIUM ON SOCIALIZED MEDICINE

- Introduction. L. S. Goin.—p. 674.
Government Interference in Medicine. Marjorie Shearon.—p. 677.
Implications of Social Medicine for Radiologists. M. F. Cahal.—p. 683.

Roentgenologic Examination of Shoulder.—Howes and Alicandri became aware that the usual roentgenograms of the shoulder, namely, anteroposterior views with the hand in supination and pronation, are insufficient, even if taken in stereoscopic pairs. They made a study of the roentgen anatomy of the shoulder to locate more accurately the site of calcifications in the tendon sheaths of the short rotator muscles and subacromial bursa; to clarify the exact location of fractures, particularly those involving the tuberosities, and to identify and locate periosteal and subcortical zones of reaction secondary to tendon injury. To realize these aims, the authors suggest that five views be taken: (1) the patient in supine position, hand in supination, shoulder elevated on a twenty-three degree angle block to open up the articular space between the humeral head and the acromial process of the scapula and bring into profile the face for the insertion of the infraspinatus tendon; (2) the patient in supine position, hand in supination, with the central ray at 180 degrees to skirt the anterior margin of the greater tuberosity, to demonstrate the insertion of the supraspinatus tendon; (3) the patient in supine position, hand in pronation, with central ray at 180 degrees to skirt the posterolateral margin of the greater tuberosity, bringing into profile the insertion of the teres minor tendon; (4) the patient in sitting position, with central ray directed upward and medially through the axilla, bringing out the glenoid neck as well as the two processes of the scapula and bringing into profile the lesser tuberosity, demonstrating the insertion of the subscapularis tendon anteriorly and the teres minor posteriorly, and (5) patient in supine position, hand in exaggerated external rotation, tube below the table top and directed into the bicipital groove, bringing into profile the walls of the groove as well as both the greater and lesser tuberosities and further confirming localization of calcifications overlying either tuberosity. Additional views may be taken at various degrees of angulation off these standards in specific instances.

Surgery, St. Louis

23:867-1034 (June) 1948

- Introduction to Symposium on Cancer of Esophagus and Gastric Cardia. G. T. Pack.—p. 867.
Roentgen Diagnosis of Cancer of Cardiac Region of Stomach. R. S. Sherman.—p. 874.
Preoperative, Operative, and Postoperative Care in Esophageal Resections. H. C. Maier.—p. 884.
Cancer of Cervical Esophagus: Discussion of Treatment. W. L. Watson and J. L. Pool.—p. 893.
Progress in Surgical Treatment of Carcinoma of Esophagus and Upper Stomach. J. H. Garlock.—p. 906.
Transsthoracic Gastric Resection for Lesions of Cardia of Stomach and Lower Part of Esophagus: Review of Cases. J. H. Payne and T. Clagett.—p. 912.
Cardioesophageal Cancers Treated Via Transsthoracic and Transdiaphragmatic Route. F. De Amesti and E. Otazita.—p. 921.
Subtotal Esophagectomy and Esophagogastrostomy for High Intrathoracic Esophageal Lesions. M. E. DeBakey and A. Ochsner.—p. 935.
Treatment of Carcinoma of Esophagus and Cardiac End of Stomach by Surgical Extirpation: 203 Cases of Resection. R. H. Sweet.—p. 952.
Surgical Treatment of Cancers of Gastric Cardia. G. T. Pack and G. McNeer.—p. 976.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

21:211-264 (May) 1948. Partial Index

Gamma Ray Protection in Radium Therapy. C. W. Wilson and J. R. Greening.—p. 211.

*Value of Platelet Counts in Radiotherapy. W. M. C. Brown.—p. 221.
Radiology in Heart Surgery. T. H. Sellors.—p. 226.
Engelmann's Disease: Osteopathia Hyperostotica Sclerotisans Multiplex Infantilis: Report of Case. H. R. Sear.—p. 236.
Tibia Vara: Case of Doubtful Etiology. H. Morris.—p. 242.
Experimental X Irradiation of Rat Thyroid. A. E. Bender.—p. 244.
Mammary Cancer: Place of Surgery and of Radiotherapy in Its Management. Part II: Radiotherapeutic Procedures. G. E. Richards.—p. 249.

Platelet Counts in Radiotherapy.—Brown points out that with the increasing use of wide field roentgen therapy the constitutional effects of radiation have become more important than such local effects as the cutaneous reaction. In particular, the effects resulting from excessive irradiation of the bone marrow require careful attention, for unless wide field irradiation is carefully controlled a severe or even fatal anemia may develop at a later date. A review of the records of cases in which severe anemia had developed after wide field irradiation indicated that these patients often showed skin hemorrhages similar to those of thrombopenic purpura, and it was noted that these skin hemorrhages preceded in their appearance the development of the anemia. Accordingly, the effect of radiation on the platelet count was studied and the conclusion was reached that the blood platelet level is a more reliable indicator of the effect of radiation on the bone marrow than the total white cell count. By determining the blood platelet level it is possible to avoid altogether the production of partial or permanent marrow failure. The use of the platelet level in the planning of treatment is described. The relationship between the development of petechial hemorrhages and radiation-induced thrombopenia is discussed.

British Medical Journal, London

1:965-1014 (May 22) 1948

Pulmonary Edema. G. R. Cameron.—p. 965.
New Conception of Angina Pectoris. R. Wyburn-Mason.—p. 972.
Tolerance Limits to Radiant Heat. D. L. Lloyd-Smith and K. Mendelsohn.—p. 975.
Sudden Death After Intravenous Sodium Bismuth Tartrate. L. Goodman.—p. 978.
Case of Murine Typhus in London. T. B. Dunn.—p. 979.
Two Cases of Tetanus Neonatorum. C. A. St. Hill and H. Lederer.—p. 980.

Edinburgh Medical Journal

55:193-256 (April) 1948. Partial Index

Investigation of Chronic Diarrhea in Adults. W. L. Lamb.—p. 203.
Scottish Pioneers in Tropical Medicine. P. Manson-Bahr.—p. 220.
The Child's Inheritance: Hereditary, Pre-Natal and Natal Influences. J. L. Henderson.—p. 232.
A Hundred Years of Chloroform. D. Guthrie.—p. 246.
Cholesterol Pleural Effusion. T. M. Curran.—p. 252.

Journal of Hygiene, London

46:1-116 (March) 1948. Partial Index

Outbreak of Infantile Gastro-Enteritis in Aberdeen: Association of Special Type of Bact. Coli with Infection. C. Giles and G. Sangster.—p. 1.
Rat Control in Plague Outbreak in Malta. S. A. Barnett.—p. 10.
*Further Work on Forecasting Smallpox Epidemics in India and British Tropical Countries Based on Previous Climatic Data. L. Rogers.—p. 19.
Combined Active and Passive Immunization Against Diphtheria. A. W. Downie, A. T. Glenny, H. J. Parish and others.—p. 34.
Studies on Vaccinia Hemagglutinin. C. M. Chu.—p. 42.
Inhibitory Action of Monoethyl Esters of S-n-Alkylthiomalic Acids and Monoethyl Esters of Alkane Sulphonyl Succinic Acids on Growth of Mycobacterium Tuberculosis. P. A. McNally.—p. 60.
Bacterial Lysis and Antiseptics. R. J. V. Pulvertaft and G. D. Lumb.—p. 62.
Investigations on Typing of Staphylococci by Means of Bacteriophage. H. W. Smith.—p. 74.
Entameba Histolytica in Wild Rats Caught in London. R. A. Neal.—p. 90.
Diagnostic Value of Widal Test in Inoculated. R. H. Mole.—p. 98.
Infective Hepatitis Among Civilians in Palestine. L. Olitzki, R. Bachi and G. Kallner.—p. 101.

Forecasting Smallpox Epidemics on Climatic Data.—

Rogers shows that earlier work on forecasting epidemics of smallpox in India, based on the study of the previous rainfall and humidity, has been confirmed and extended. An extension

of the inquiry to other tropical countries indicates that in tropical countries in general with well marked dry and wet seasons, the annual decline of smallpox incidence to a low minimum in relation to high absolute humidities during the rainy season is the rule; for it is absent in equatorial Uganda with rains throughout the year, and both the monsoon period and the monthly incidence of smallpox are reversed in such a country of the Southern hemisphere as Nyassaland in accordance with the general rule. Where smallpox is endemic, increased prevalence in any year may usually be foreseen by watching the meteorologic records in time to control the expected increase to some extent by increased use of vaccination.

South African Journal Medical Sciences, Johannesburg

13:1-46 (Jan.) 1948

*Relationship Between Ectoparasite and Host. Botha De Meillon, J. M. Thorp and F. Hardy.—p. 1.
Anoxia and Liver with Special Reference to Shock and Chronic Malnutrition. J. Gillman and T. Gillman.—p. 11.
Method for Determination of Hippuric Acid in Urine. J. W. F. Hampton.—p. 45.

Relationship Between Ectoparasite and Host.—De Meillon, Thorp and Hardy gave to rabbits by mouth or intravenous injection various drugs and noted the effects on the rate of development, survival and egg-production of *Cimex lectularius*. All of the following drugs given by intravenous injection produced some adverse effect on *Cimex lectularius*: quinine dihydrochloride, quinacrine hydrochloride, tryparsamide, nearsphenamine and epinephrine. Of these, tryparsamide and nearsphenamine produced the most striking effects in allowing few bugs to reach maturity and in causing a delay in the molting time from the fifth instar to the adult stage. Oral administration of flowers of sulfur, decoction of aloes and syrup alli (B. P.) to rabbits were without effect on the *Cimex lectularius* fed by these rabbits. Experiments in which *Cimex lectularius* was reared on rats receiving a protein-deficient diet show that bedbugs develop normally up to the fifth instar but during the process of molting to the adult stage a large proportion die—death being due to herniation of the intestine and its contents through the new cuticle of the partially molted adult. About 40 per cent of bugs which manage to molt successfully to the adult stage die within a week. Egg production of adults which survive long enough to be tested is erratic but on the whole lower than normal. Normal egg production appears to be resumed after a single feed on a normal animal.

Presse Médicale, Paris

56:405-416 (June 12) 1948. Partial Index

Experimental Study on the "Bile Treated" Bacillus-Guerin. L. Nègre and J. Bretey.—p. 407.
Technical Modifications Gradually Brought About in BCG Vaccination. R. Weill-Halle.—p. 409.
*Extension of Prophylaxis of Tuberculosis by the BCG Bacillus to Adolescents and Adults. A. Courcoux.—p. 410.

BCG Vaccine for Adolescents and Adults.—Courcoux points out that a large number of adolescents and adults retain a negative tuberculin reaction. Sooner or later these anergic young adults will have contact with tubercle bacilli, and this late primary infection threatens more than 1 in 3 persons between 15 and 25 years of age. Experience proves that this late primary infection may terminate in a tuberculous process. Vaccination with BCG is advisable to protect these young persons against tuberculosis. Experiments carried out in France have proved conclusive. These results were confirmed in other countries, chiefly in Sweden and other Northern countries in which BCG vaccination has been performed on a large scale. The author reports statistics on trials carried out in four nurses' schools. In these the incidence of tuberculosis among the pupils has been reduced to almost zero, whereas it was between 35 and 38 per cent in the years before the BCG vaccination was instituted. The author concludes that young persons with negative tuberculin reaction should be treated with BCG vaccine before starting to work, and they should be kept away from tuberculous contacts two months before and two months after this treatment.

Book Notices

Essentials of Public Health. By William P. Shepard, R.S., M.D., M.A. With the Collaboration of Charles Edward Smith, M.D., D.P.H., Rodney Rau Beard, M.D., M.P.H., and Leon Benedict Reynolds, A.B., Sc.D. With a foreword by Hay Lyman Wilbur, M.D., LL.D., Sc.D., Chancellor, Stanford University, Stanford, California. Fabrikoid. Price, \$5. Pp. 600, with 30 illustrations. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5, 1948.

This is a manual on public health presented as a condensed handbook for physicians in private practice, medical students and members of allied professions. Its purpose is stated as "to set forth the purposes and methods of public health work." This is done simply, concisely and clearly. In addition to the four authors, numerous authorities in various fields of public health and preventive medicine have served as consultants and contributors. The book begins with a chapter orienting the practice of medicine in the field of public health, and proceeds to consider environmental sanitation, communicable disease control, including tuberculosis and the venereal diseases, and other public health problems, such as maternal and child health, infant health, health of the preschool child, heart disease, cancer, mental hygiene, diabetes, conservation of vision and hearing, crippled children, dental hygiene, nutrition, housing and health, school health services, health education, occupational health and statistics.

Under each heading is a careful interpretation of the physician's relationships to the public health program. Throughout the book the author gives evidence of a wholesome appreciation of the importance of the practicing physician and an impartial willingness to concede that mistaken conduct on the part of either the private physician or the representative of the health department leads to needless misunderstanding and destructive antagonisms.

A Psychiatric and Sociologic Study of a Series of Swedish Naval Conscripts. By Martin Ekblad. *Acta psychiatrica et neurologica Supplementum 49.* From the Swedish by Grace Lundberg. Paper. Pp. 201. Ejnar Munksgaard, Nørregade 6, Copenhagen K, 1948.

The author of this monograph utilizes Swedish compulsory military training to analyze psychiatric and social characteristics of a sample of naval conscripts, 995 of whom were personally interviewed and evaluated. From what is a good sample and statistically sound, he attempts to evaluate these factors of personality, background and physical equipment in relation to the character of service performed by the entire group and certain portions of the group having identifying characteristics. The usefulness of being able to predict, in general, future performance of individuals with certain levels of intelligence and other characteristics such as criminal records, broken homes, etc., will be obvious to all who have had to select or disqualify men for military duty.

The group of naval conscripts studied is particularly uniform. All were inducted between the ages of 20 and 22 and at about the same time and place. The men are only "unqualified conscripts from the ranks," since students and other similar categories who were in an exceptional position because of earlier training were not included.

All the men discussed had physical and psychiatric examinations and were psychologically tested. Written inquiries were made in their home communities and schools concerning past performance and family background. The Swedish penal register was searched for convictions. All convictions, complaints and illnesses of conscripts while serving were analyzed.

The author divides men into two categories: (a) those with former experience as merchant seamen, and (b) conscripts without sea experience. On comparison of these two groups, the "seamen" conscripted were found to be of a slightly higher intellectual level than the "nonseamen" group. Of the two groups, however, 33 per cent of the "seamen" were classified by the author as psychopathic, as compared with only 15 per cent of the "nonseamen." This is rather remarkable, since the author points out that social maladjustment alone was not taken to be sufficient to justify a diagnosis of psychopathy; signs of abnormal personality were also required. In spite of this standard, 58 per cent of the "seamen" completed their military training without a break or any insufficiency reaction, and 87 per

cent of the "nonseamen." "Seamen" conscripts were more often delinquent, and there was a higher incidence of mentally abnormal and maladjusted persons among the "seamen" than in a corresponding group of "nonseamen."

The mental level distribution and incidence of psychopathy in the "nonseamen" is essentially the same as in the general population of Sweden of the same age group. This testifies to the validity of the sample studied.

From a study of the conscripts who completed their training without a break or without being sentenced, including conscripts promoted to the rank of "able seaman," a surprisingly large number had low intelligence test scores. The author states that a low intelligence test score with a mental age as low as 9 years is not sufficient cause, in itself, for exempting a man from service except in those cases in which other personality defects can also be demonstrated.

As a result of the study of military convictions, the author found that a single offense over a period of time does not necessarily constitute a sign of mental abnormality, whereas more than two offenses almost without exception is a sign of psychopathy. Punishment as a result of convictions is of little value except as a morale factor to other conscripts. He therefore advocates that all men convicted of an offense be seen by a psychiatrist. As a counterpart, civil delinquency in youth prior to training usually points to a personality disturbance. Those from broken homes and of illegitimate birth have more difficulty in adjusting to military life than others.

The author's tabulations show that those with the lowest grades of intelligence (mental age below 12 years) are least able to stand extraordinary mental stress during training. Yet those with only slightly below average intelligence (12 to 14 years) are as capable of standing stress as those above average intelligence. Delinquency in civil life before training was actually less in those with a mental age below 12 than those with higher levels.

Drunkenness prior to conscription had no relationship to intellectual level, although several offenses, such as multiple civil convictions, in a large measure may be regarded as a sign of adjustment difficulty.

Eighty-nine per cent of the men who completed their training without a break were mentally normal, including 8 per cent with a mental age of 11 years or below, while only 17 per cent of those sent to a psychiatrist were normal, including 5 per cent with a mental age of 11 years or below.

In conclusion, the author states that exemption from military service because of mental deficiency should be granted only when the mental age is below 9 years; that persons with severe psychopathy should be exempted; that persons with milder forms should serve because of the morale factor; that psychopaths will be weeded out if all men sentenced for a military offense are seen by a psychiatrist, and that men sentenced for a military offense should be permitted to count as military service all time spent in serving sentences inflicted in connection with military crimes.

The last of these conclusions, the opposite to present practice, stems from the feeling that only the persons with less severe psychopathy should be in service and that because of their limited usefulness they should serve their terms only as a morale factor for the other men.

Stereoscopic Atlas of Neuroanatomy. By H. S. Rubinstein, M.D., Ph.D., Director of the Alfred Ullman Laboratory for Neuro-Psychiatric Research, Sinai Hospital, Baltimore, and C. L. Davis, M.D., Professor of Anatomy, School of Medicine, University of Maryland, Baltimore. Paper. Price, \$10. Pp. 19, with 43 plates. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1947.

This publication consists of 10 pages of description of the technic of making a gross dissection of the brain and of 43 stereoscopic views illustrative of the gross anatomy of the brain. Since a stereoscope was not available to the reviewer; it may not be possible for him to judge accurately the relative merits of these illustrations. However, to the unaided eye they are not satisfactory. Certainly any serious student could learn far more from the gross dissection of an actual brain with any one of the several modern textbooks of neuroanatomy as a guide than from a detailed study of these views. It seems unlikely that these 43 stereoscopic views would be worth \$10 to very many students.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

LIZARD AND SPIDER BITES

To the Editor:—What is the method of treatment for (1) a child or adult bitten by *Heloderma* (the Gila monster); (2) a child or adult bitten by members of the class of arthropods known as Arachnida (a) specifically by the small scorpion which has the so-called tubercle on the tip of its tail; (b) black widow spider bite?

J. Giltitz, M.D., Sacaton, Ariz.

ANSWER.—(1) The local treatment is the same as for snake-bite. *Heloderma* is found in Arizona and New Mexico chiefly, and is one of the two lizards with a venomous bite. The other venomous lizard is the beaded lizard of Southwestern Mexico. Its bite rarely is serious, because the sluggish habits of the lizard and its anatomic construction do not favor easy or abundant introduction of venom with the bite. More venom is introduced if the lizard is on its back when it bites. After biting, the lizard is often hard to dislodge. Paralysis, dyspnea and convulsions may follow. Death rarely ensues.

(2a) Scorpions belong to the order of Scorpionida in the class of Arachnida. About three hundred species are known. The tip of the tail has a prominent bulblike enlargement which carries the terminal sting, which alone is dangerous for man. In parts of Mexico and Brazil the genera *Centruroides* and *Tityus* are dangerous. In Egypt *Buthus* is especially dangerous. Tropical scorpions may be as much as 8 inches (20.3 cm.) in length, but the size of the animal is no index of its poisonous properties.

Scorpions are nocturnal, seizing spiders and large insects with their claws and stinging them to death. In the daytime they hide under buildings, boards, stones and debris, also in clothing and shoes. The symptoms of sting are first a local intense burning pain, followed by drowsiness, severe nausea, sweating and vomiting. Speech becomes difficult and oral administration of medicine may be practically impossible. A fever (up to 104 or 105 F.) ensues. Photophobia is common. Hemorrhage can occur into the intestine, stomach or lungs, and pulmonary edema may occur. Reflexes are exaggerated and convulsions may occur. Survival for three hours means a good prognosis, although death has been reported on the fifteenth day. The poison acts through the nervous system on the respiratory and cardiac centers.

Treatment should be immediate with a tight proximal ligature, free incision of the sting area and suction to remove venom. Morphine and sedatives are often necessary for the pain and to promote sedation. A drop of strong ammonia on the site of sting may help alleviate the pain, but morphine hypodermically is more reliable. The small scorpions of the Southern United States are probably never fatal in biting but may be extremely painful and give rise to constitutional symptoms. Specific antivenin is efficacious when available.

(2b) The "black widow" spider, *Latrodectus matans*, is said to have caused 400 reported cases with 16 deaths in the United States. It is found from southern Canada to South America as far south as Peru and Chile. The bite causes excruciating pain, scarcely yielding to morphine. The venom, as in cobra poisoning, is most active on nerve ends. Ten per cent solution of calcium gluconate, 10 cc., should be given intravenously or intramuscularly. Sheep or horse specific antivenin has been prepared and is said to be obtainable from Mulford or Squibb. Desensitization should be done before use of these serums. Hot applications to the site of the bite may help relieve the pain. In bites on the extremities a tourniquet should be applied, and suction used on incisions of the bite area. The spiders are common under privy seats and bites about the genitals are common.

CHEMICAL RESPIRATORY IRRITATION

To the Editor:—Is there any connection between frequent colds in the head and respiratory irritation from sulfur dioxide?

F. J. Dewane, M.D., Menominee, Mich.

ANSWER.—Chemical irritants can and do produce irritation to the nasal mucosa of such a degree as to result in symptoms of acute rhinitis. Frequent colds may follow because of persisting engorgement with stasis and obstruction. Impaired ciliary activity further predisposes to infection. Patients subjected to the fumes of chemicals are more likely to experience episodes of acute infection of the upper respiratory tract.

VIRUS X INFECTION

To the Editor:—At present in this city many cases of so-called virus X infections, characterized by high grade and prolonged fever with virtually negative results of physical examination, are occurring. The urine is normal. Blood shows a peculiar picture with high relative lymphocytosis and monocytosis. Treatment seems to be entirely ineffective, although the prognosis appears to be good. From lay sources in Great Britain I have learned that they seem to possess an efficient treatment for such infections. No further pertinent information could be obtained from these sources. Please advise.

Walter Newman, M.D., Springfield, Mass.

ANSWER.—The term "virus X infection" was coined in Los Angeles in December 1947 to designate a disease of the respiratory tract which was similar to influenza but did not give the serologic reactions of either influenza A or influenza B. Later, it was shown that this outbreak was caused by an influenza virus which has since been designated as influenza A'. Since the outbreak in Los Angeles, many infectious diseases of unknown or unidentified cause have been called virus X infections. Some of these outbreaks may have been due to an influenza virus; others most likely were not. No statement regarding the cause of the present outbreak in Springfield, Mass., has been seen. It would certainly be unusual for an influenza virus to be operating in June. No statement has been seen concerning an effective treatment in Great Britain for the so-called virus X infections. There is a vaccine for influenza A and for influenza B. These, however, were not effective against influenza A'. Since the outbreak in Los Angeles, influenza A' virus has been included in the vaccine against influenza.

RABIES

To the Editor:—Is there ground for the opinion recently offered by physicians that the Pasteur treatment is not of value in preventing rabies after a person had been bitten by a known rabid animal?

M.D., Mississippi.

ANSWER.—The statement that the Pasteur antirabic method is not of value in the prevention of rabies after bites by rabid animals is groundless. Before the method came into use, about 15 per cent of persons bitten died of rabies. Since the introduction of the method, less than 1 per cent have died of rabies. The Pasteur Institute of Southern India (founded in 1907) at Conoor and its subsidiary centers reported (Annual Report of the Directory, 1946-1947, Madras, 1947) a death rate of not more than 0.99 per cent among thousands of persons given antirabic treatment after bites and scratches by rabid animals, mostly dogs. In 1946 the rate was 0.08 per cent. While the treatment for the prevention of rabies after bites by rabid dogs or other animals may not be effective, especially in patients treated in the latter stages of the incubation period, it is the only specific method of prevention now available, and it should be used promptly and faithfully in all cases in which it may be of value.

SEDIMENTATION RATE

To the Editor:—What, if any, effect do drugs have on the sedimentation rate of the blood? I am particularly interested in the effect of acetylsalicylic acid and antihistaminic drugs, such as diphenhydramine, "amyltal" (5-isoamyl-5-ethylbarbituric acid) and ephedrine mixtures.

Francis E. Gilfoy, M.D., Cleveland.

ANSWER.—It has been demonstrated frequently that acetylsalicylic acid and other salicylates will slow the sedimentation rate of red blood cells when given to the patient in considerable dosage and will cause striking decrease in the sedimentation rate when added to the blood in a test tube. Salicylates, in general, increase the stability of suspensions of red cells in plasma. Information is not available on the other drugs that are mentioned.

ALLERGY TO VITAMINS

To the Editor:—Does anaphylaxis to vitamins occur?

M.D., Florida.

ANSWER.—Although sensitivity to vitamins has been reported in the literature, confirmation is needed before such studies can be accepted. Some of the "allergic" responses produced by vitamins may prove to be due to impurities or other extraneous factors rather than the vitamin per se. Toxic reactions to extremely large doses of certain vitamins have been reported, but these reactions are toxic rather than allergic in nature. As the occurrence of proved allergic or anaphylactic reactions to chemically pure vitamins requires further study, a categorical answer cannot be given to this question.

